Summer School: Alg 2 Week 2 Day 4 Name_____

Radical Expressions Day 1: Simplifying and Operations: Addition and Subtraction

Simplify.

Multiples of 4 and #78

1) $\sqrt{150}$

2) $\sqrt{27}$

3) $\sqrt{72}$

4) $\sqrt{8}$

5) $\sqrt{512}$

6) $\sqrt{200}$

7) $\sqrt{192x^4}$

8) $\sqrt{343n^4}$

9) $\sqrt{147m}$

10) $\sqrt{252p}$

11) $\sqrt{108x^2}$

12) $\sqrt{175n^2}$

13) $\sqrt{144x^3y^4}$

14) $\sqrt{175a^3b^3}$

15) $\sqrt{100x^3y^2}$

16) $\sqrt{128m^4n^4}$

17) $\sqrt{64x^4y^3}$

18) $\sqrt{112mn^2}$

19) $\sqrt[3]{-64}$

20) $\sqrt[3]{40}$

21) $\sqrt[3]{-32}$

22) $\sqrt[3]{56}$

23) $\sqrt[3]{216}$

24) $\sqrt[4]{324}$

25) $\sqrt[4]{48n^3}$

26) $\sqrt[4]{486a^4}$

27) $\sqrt[4]{48n^5}$

28) $\sqrt[4]{96x^5}$

29) $\sqrt[4]{162x^6}$

30) $\sqrt[4]{96p^7}$

31) $6\sqrt{125n^4}$

32) $4\sqrt{50x^3}$

33) $-2\sqrt{32a^4}$

34) $-5\sqrt{96k^4}$

35) $8\sqrt{32x}$

36) $5\sqrt{80x}$

(1)

37) $-6\sqrt{27u^2v}$

38) $8\sqrt{54x^2y^3}$

39) $4\sqrt{8u^3v^2}$

40) $7\sqrt{20x^3y}$

41) $-2\sqrt{12a^4b^3}$

42) $-6\sqrt{384x^4y^2}$

43) $4\sqrt[3]{-162m^2n^8}$

44) $-7\sqrt[3]{54xy}$

45) $-\sqrt[3]{40xy^2}$

46) $4\sqrt[3]{250uv^2}$

47) $2\sqrt[3]{-500x^8y^3}$

48) $8\sqrt[3]{512a^8b^4}$

49) $-3\sqrt[3]{135x^7y^5}$

50) $3\sqrt[3]{189a^7b^5}$

51) $-8\sqrt[3]{32x^7y^6}$

52) $7\sqrt[3]{875m^6n^7}$

53) $-4\sqrt[3]{375x^6y^7}$

54) $8\sqrt[4]{96x^8y^5}$

55) $-\sqrt{6}-2\sqrt{6}$

56) $2\sqrt{3}+3\sqrt{3}$

57) $2\sqrt{6}-2\sqrt{6}$

58) $2\sqrt{2}+2\sqrt{2}$

59) $-\sqrt{2}+3\sqrt{2}$

60) $2\sqrt{5}-2\sqrt{5}$

61) $2\sqrt{54}-2\sqrt{6}$

62) $-2\sqrt{18}-\sqrt{8}$

63) $3\sqrt{18}-3\sqrt{2}$

64) $2\sqrt{45}+2\sqrt{45}$

65) $-\sqrt{8}+3\sqrt{2}$

66) $-2\sqrt{8}+3\sqrt{2}$

67) $2\sqrt[7]{-384}+2\sqrt[7]{3}$

68) $2\sqrt[3]{162}+3\sqrt[3]{48}$

69) $-2\sqrt[3]{16}+2\sqrt[3]{-54}$

70) $-2\sqrt[3]{135}-3\sqrt[3]{135}$

71) $3\sqrt[3]{108}-2\sqrt[3]{4}$

72) $-\sqrt[3]{4}+3\sqrt[3]{108}$

73) $-2\sqrt[3]{48}-2\sqrt[3]{-48}$

74) $-2\sqrt[3]{2}-2\sqrt[3]{2}$

75) $2\sqrt[3]{48}-3\sqrt[3]{6}$

76) $-2\sqrt[3]{5}-3\sqrt[3]{5}$

77) $-\sqrt[3]{3}-3\sqrt[3]{-81}$

78) $3\sqrt[3]{-3}+3\sqrt[3]{-24}$

(2)

Name: _____

Unit 5B – Radicals

WS-1: Radical Operations

Simply each expression. Give exact answers

1. $\sqrt{12}+\sqrt{24}$
2. $\frac{\sqrt{2}}{2}+\sqrt{2}$
3. $\sqrt[3]{24}+\sqrt[3]{81}$
4. $\sqrt[4]{48}-\sqrt[4]{243}$
5. $\sqrt[3]{2000w^2z^5}-\sqrt[3]{16w^2z^5}$

Simplify the product. Give exact answers

6. $\sqrt{3}\bullet\sqrt{5}$
7. $2\sqrt{5}\bullet 3\sqrt{10}$
8. $3\sqrt{2}\bullet -4\sqrt{10}$
9. $\sqrt[3]{\frac{4x^2}{3}}\bullet\sqrt[3]{\frac{2x^2}{3}}$
10. $\sqrt[4]{\frac{4x^2}{5}}\bullet\sqrt[4]{\frac{4x^3}{25}}$
11. $\left(2\sqrt{5}-7\right)\left(2\sqrt{5}+4\right)$
12. $\left(3\sqrt{3}-\sqrt{2}\right)\left(\sqrt{2}+\sqrt{3}\right)$

Write each product as a single radical expression.

13. $\sqrt[3]{3}\bullet\sqrt{3}$
14. $\sqrt[3]{5}\bullet\sqrt[4]{5}$
15. $\sqrt[3]{2}\bullet\sqrt{5}$
16. $\sqrt[3]{2}\bullet\sqrt[4]{3}$

Find the product of each pair of conjugates.

17. $\left(\sqrt{5}+\sqrt{2}\right)\left(\sqrt{5}-\sqrt{2}\right)$
18. $\left(3\sqrt{2}+\sqrt{5}\right)\left(3\sqrt{2}-\sqrt{5}\right)$
19. $\left(4\sqrt{y}+3\sqrt{z}\right)\left(4\sqrt{y}-3\sqrt{z}\right)$

Simplify each expression.

20. $\frac{1}{\sqrt{2}}-\frac{1}{\sqrt{8}}+\frac{1}{\sqrt{18}}$
21. $\frac{1}{\sqrt{3}}+\sqrt{\frac{1}{3}}-\sqrt{3}$
22. $\left(3+\sqrt{x}\right)^2$
23. $\left(\sqrt{x-1}+1\right)^2$
24. $\sqrt[3]{\frac{y^7}{4x}}$
25. $\sqrt[4]{\frac{16}{9z^3}}$
26. $\sqrt[3]{\frac{x}{5}}\bullet\sqrt[3]{\frac{x^5}{5}}$

Name _____

Honors Algebra II
Unit 5B: Radical Functions
WS 2 – Solving Radical Equations and Inequalities

SHOW ALL WORK ON A SEPARATE SHEET OF PAPER.

Solve each equation

1. $\sqrt{x+2}=5$
2. $\sqrt{x+4}=3\sqrt{x}$
3. $3\sqrt[3]{x}=\sqrt[3]{7x+5}$
4. $\sqrt{-14x+2}=x-3$
5. $4(x-12)^{\frac{1}{3}}=-16$
6. $\sqrt[3]{4x+1}-5=0$
7. $3\sqrt{x-11}=18$
8. $\sqrt[4]{10x+11}=3$
9. $x+2=\sqrt{3x+6}$
10. $(10x-25)^{\frac{1}{2}}=x$
11. $5(6x+1)^{\frac{1}{4}}=10$
12. $4(7x+18)^{\frac{1}{2}}=4x$
13. $\sqrt{x-3}=\sqrt{x+15}-2$
14. $\sqrt{x+16}=x-\sqrt{x+7}$
15. $\sqrt{x-3}-\sqrt{x-2}=1$
16. $\sqrt{\sqrt{x-3}}=\sqrt{x-15}$
17. $\sqrt{x^2-7x+12}-x=x-6$

Solve each inequality

18. $\sqrt{4x+5}\leq 3$
19. $\sqrt{x-4}+3>9$
20. $\sqrt[3]{x+3}\geq 2$
21. $\sqrt{x-7}+9<12$
22. $\sqrt[3]{x-6}+7>4$
23. $\sqrt{x+2}-1\leq 4$

H Algebra II Name_____

WS-3: Graphing & Characteristics of Square & Cube Roots

Use answer sheet

For each problem, describe its transformation compared to its parent graph. Then, graph and give the characteristics: vertex, domain, range, extremas, intervals of change, end behaviors and intercepts.

1. $y = 5\sqrt{x} + 3$
2. $y = 3\sqrt[3]{x} + 6$
3. $y = -\frac{1}{2}\sqrt{x+6} + 4$
4. $y = -4\sqrt{-(x+2)}$
5. $y = 3\sqrt{x-4} - 8$
6. $y = -\sqrt[3]{x+2} - 4$
7. $y = \frac{1}{4}\sqrt{x-9} - 4$
8. $y = \sqrt[3]{-2(x-1)} + 8$
9. $y = \sqrt{\frac{1}{2}(x-3)} + 1$
10. $y = -3\sqrt{x+2} + 6$
11. $y = -\frac{1}{4}\sqrt[3]{x+5} - 1$
12. $y = -\sqrt{-2x+2} - 3$

5a

Honors Algebra II Name _____

WS-4: Inverses of Radical Functions Unit 5B - Radical Functions

Find the inverse of each of the following functions. State the domain and range for the original function and its inverse.

1. $f(x) = \sqrt{x+4} - 3$
2. $g(x) = 2\sqrt[3]{x-5}$
3. $f(x) = -\sqrt{2x+3} - 4$
4. $f(x) = -\sqrt{x-6} + 2$
5. $g(x) = \sqrt{x} + 1$
6. $h(x) = \sqrt[3]{x-10}$
7. $f(x) = 4\sqrt{6-x} - 8$
8. $f(x) = 3\sqrt[3]{2x+1}$
9. $f(x) = -2\sqrt[3]{8-x}$

5b

WS-3 answer sheet

Graphing & Characteristics of Square & Cube Roots
Answer Sheet

1. Equation:

   Vertex:

   Domain: Range:

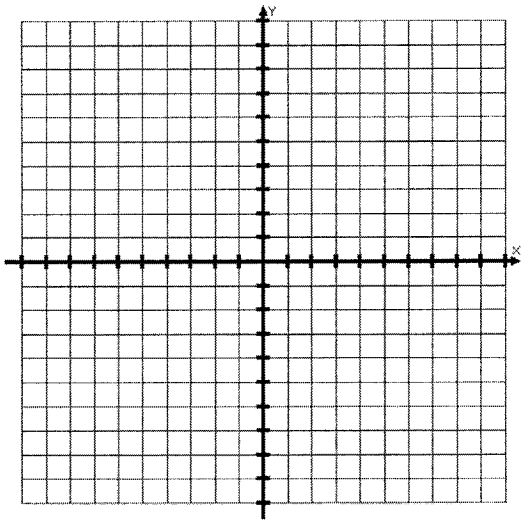
   X-Int: Y-Int:

   Extrema:

   Int of Inc:

   Int of Dec:

   End Behavior:



2. Equation:

   Vertex:

   Domain: Range:

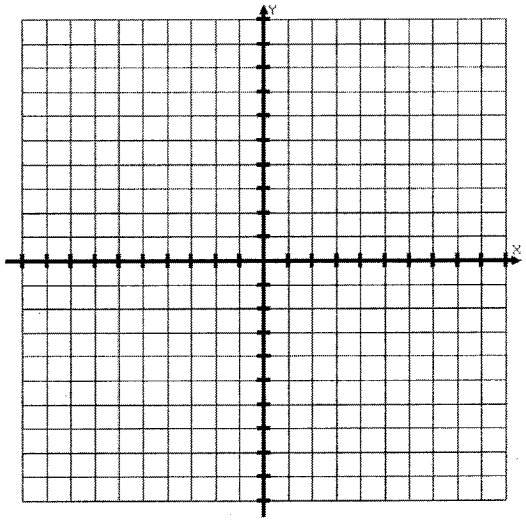
   X-Int: Y-Int:

   Extrema:

   Int of Inc:

   Int of Dec:

   End Behavior:



3. Equation:

   Vertex:

   Domain: Range:

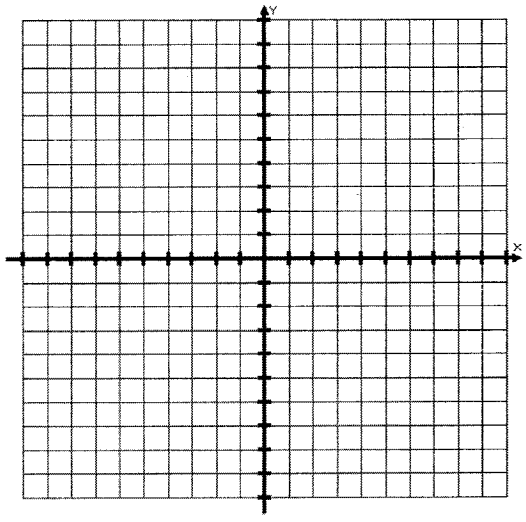
   X-Int: Y-Int:

   Extrema:

   Int of Inc:

   Int of Dec:

   End Behavior:



4. Equation:

   Vertex:

   Domain: Range:

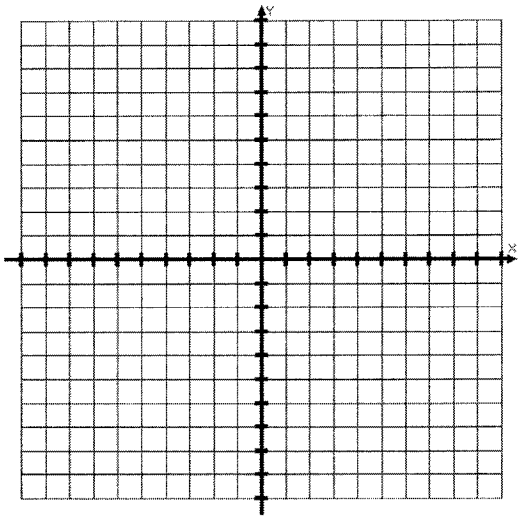
   X-Int: Y-Int:

   Extrema:

   Int of Inc:

   Int of Dec:

   End Behavior:



5. Equation:

   Vertex:

   Domain: Range:

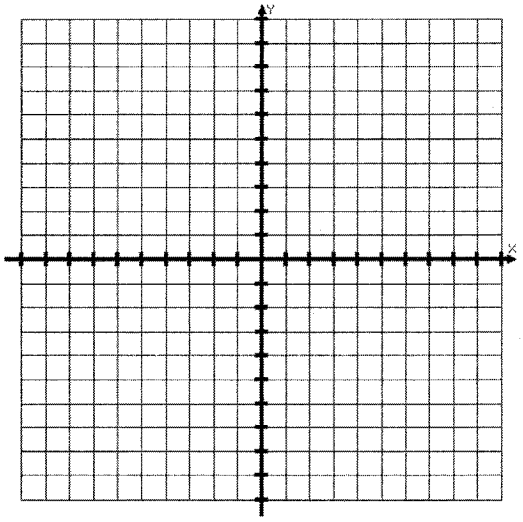
   X-Int: Y-Int:

   Extrema:

   Int of Inc:

   Int of Dec:

   End Behavior:



6. Equation:

   Vertex:

   Domain: Range:

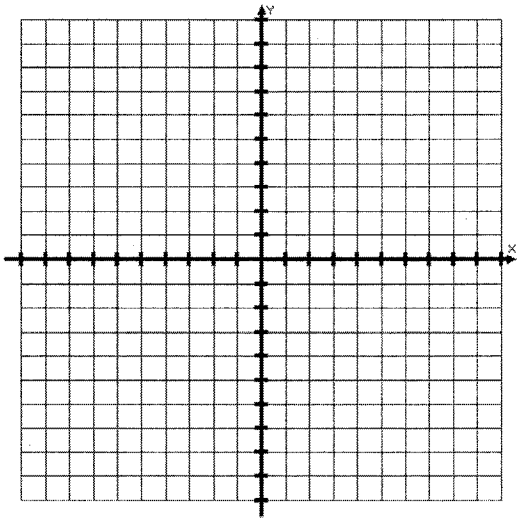
   X-Int: Y-Int:

   Extrema:

   Int of Inc:

   Int of Dec:

   End Behavior:



7. Equation:

   Vertex:

   Domain: Range:

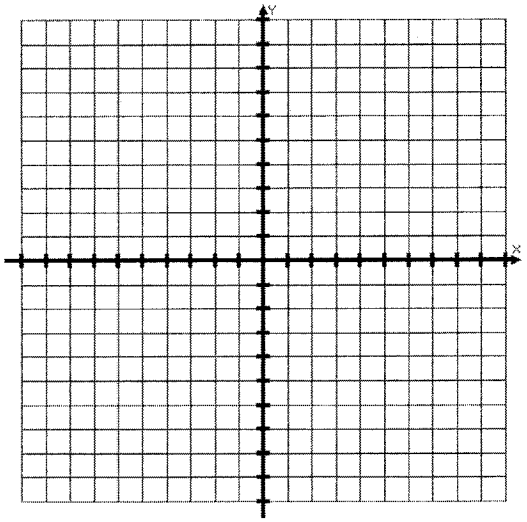
   X-Int: Y-Int:

   Extrema:

   Int of Inc:

   Int of Dec:

   End Behavior:



8. Equation:

   Vertex:

   Domain: Range:

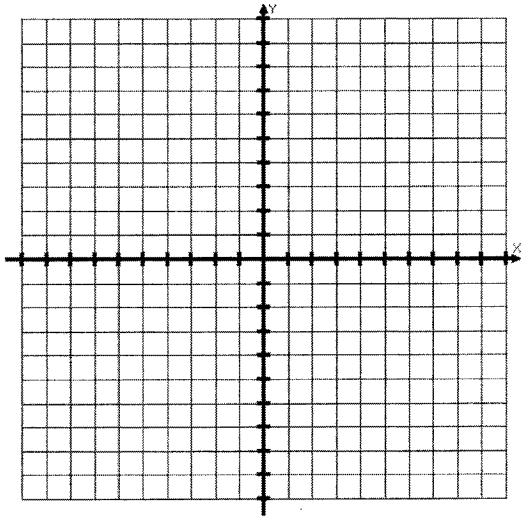
   X-Int: Y-Int:

   Extrema:

   Int of Inc:

   Int of Dec:

   End Behavior:



9. Equation:

   Vertex:

   Domain: Range:

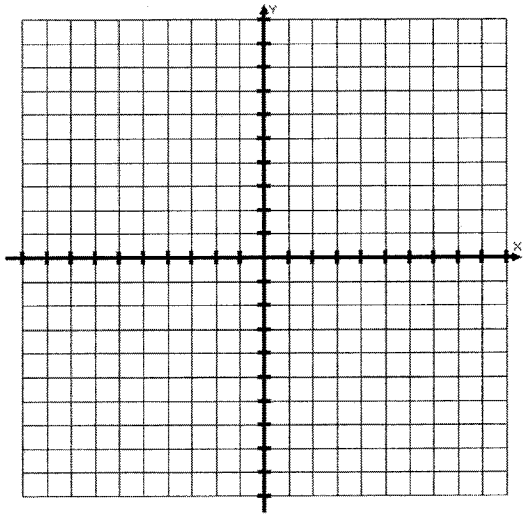
   X-Int: Y-Int:

   Extrema:

   Int of Inc:

   Int of Dec:

   End Behavior:



10. Equation:

Vertex:

Domain: Range:

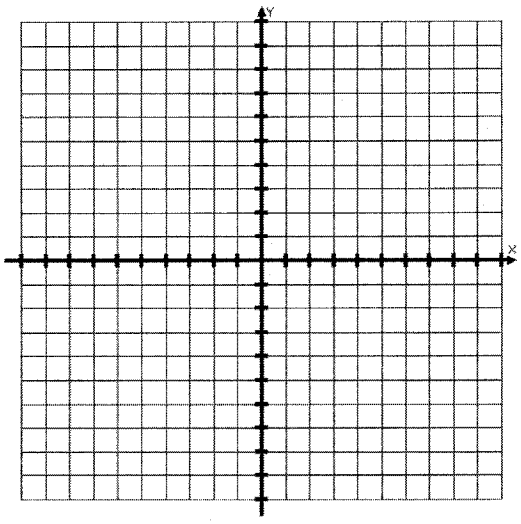
X-Int: Y-Int:

Extrema:

Int of Inc:

Int of Dec:

End Behavior:



11. Equation:

Vertex:

Domain: Range:

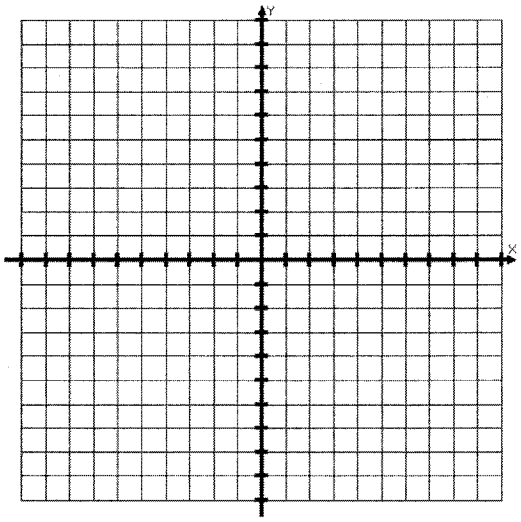
X-Int: Y-Int:

Extrema:

Int of Inc:

Int of Dec:

End Behavior:



12. Equation:

Vertex:

Domain: Range:

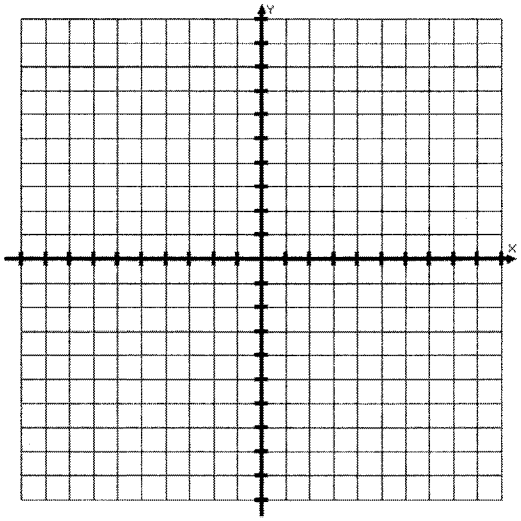
X-Int: Y-Int:

Extrema:

Int of Inc:

Int of Dec:

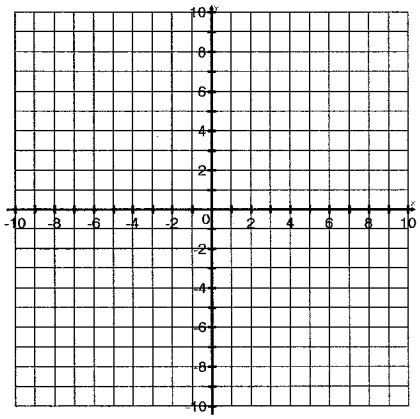
End Behavior:



Honors Algebra II ***Name*** _____

WS-5: Graphing Absolute Value Functions

1) $f(x) = |x - 2| - 4$



Vertex: AoS:

Domain: Range:

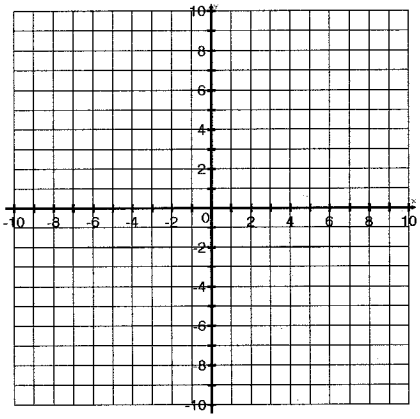
Max: Min:

Int of Inc: Int of Dec:

X-Int: Y-Int:

End Behavior:

2) $g(x) = |x + 1|$



Vertex: AoS:

Domain: Range:

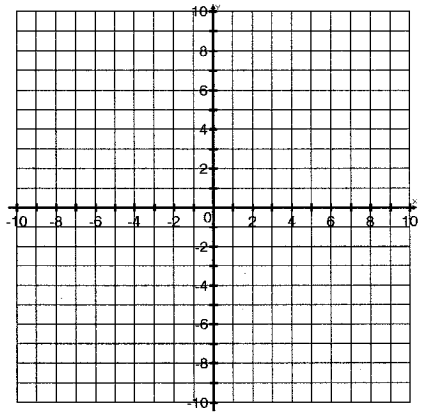
Max: Min:

Int of Inc: Int of Dec:

X-Int: Y-Int:

End Behavior:

3) $h(x) = -2|x| + 5$



Vertex: AoS:

Domain: Range:

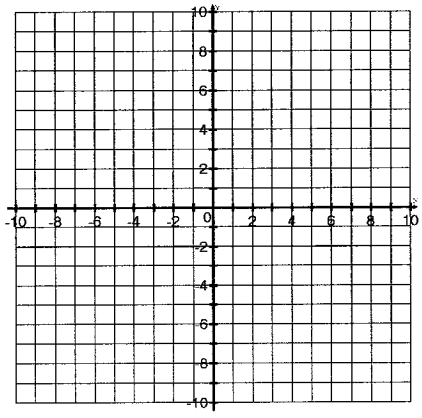
Max: Min:

Int of Inc: Int of Dec:

X-Int: Y-Int:

End Behavior:

4) $f(x) = \frac{2}{3}|x - 3| - 4$



Vertex: AoS:

Domain: Range:

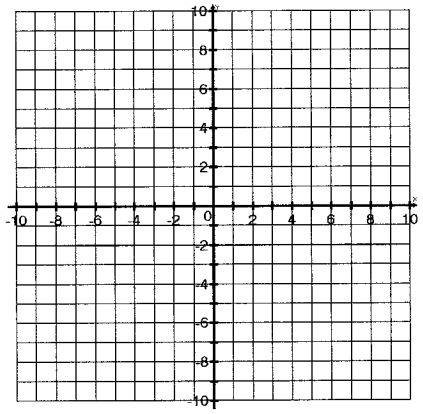
Max: Min:

Int of Inc: Int of Dec:

X-Int: Y-Int:

End Behavior:

5) $g(x) = -|3x + 6|$



Vertex: AoS:

Domain: Range:

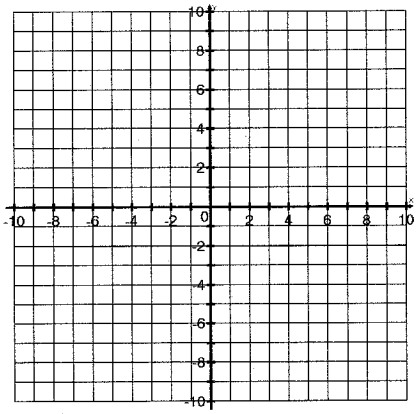
Max: Min:

Int of Inc: Int of Dec:

X-Int: Y-Int:

End Behavior:

6) $h(x) = \left|\frac{1}{2}x - 2\right| + 3$



Vertex: AoS:

Domain: Range:

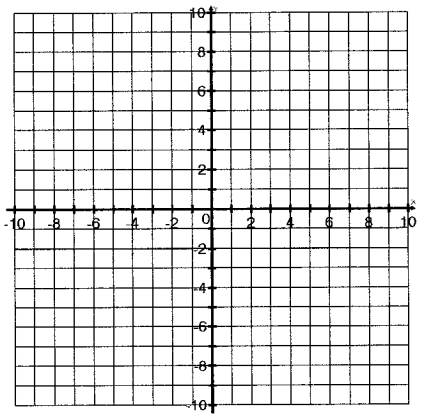
Max: Min:

Int of Inc: Int of Dec:

X-Int: Y-Int:

End Behavior:

7) $m(x) = \frac{1}{3}|2x - 8| - 2$



Vertex: AoS:

Domain: Range:

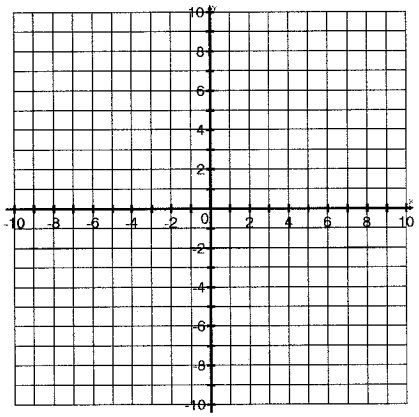
Max: Min:

Int of Inc: Int of Dec:

X-Int: Y-Int:

End Behavior:

8) $z(x) = -4\left|\frac{1}{3}x + 1\right| + 1$



Vertex: AoS:

Domain: Range:

Max: Min:

Int of Inc: Int of Dec:

X-Int: Y-Int:

End Behavior:

Kuta Software - Infinite Algebra 2 Name_____

Solving Absolute Value Equations

Date_____ Period____

Solve each equation.

1) $|3x| = 9$

2) $|-3r| = 9$

3) $\left|\frac{b}{5}\right| = 1$

4) $|-6m| = 30$

5) $\left|\frac{n}{3}\right| = 2$

6) $|-4 + 5x| = 16$

7) $|-2r - 1| = 11$

8) $|1 - 5a| = 29$

9) $|-2n + 6| = 6$

10) $|v + 8| - 5 = 2$

11) $|5x| + 5 = 45$

12) $3|-8x| + 8 = 80$

13) $5 - 8|-2n| = -75$

14) $-5|3 + 4k| = -115$

15) $\frac{|7p + 4|}{8} = 3$

16) $3 - |8x - 6| = 3$

17) $2 - 5|5m - 5| = -73$

18) $6|1 - 5x| - 9 = 57$

19) $3|3 - 5r| - 3 = 18$

20) $5|9 - 5n| - 7 = 38$

9

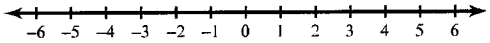
Kuta Software - Infinite Algebra 2 Name_____

Absolute Value Inequalities

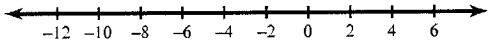
Date_____ Period____

Solve each inequality and graph its solution.

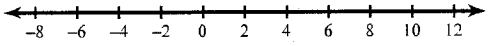
1) $|6n| \leq 18$



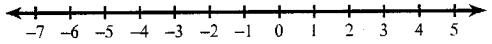
2) $|p+4| \leq 8$



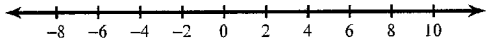
3) $|m-2| < 8$



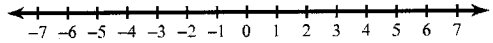
4) $|5x| \leq 10$



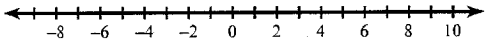
5) $|x| + 5 \geq 11$



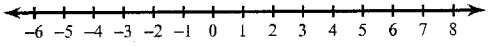
6) $|m| - 2 > 0$



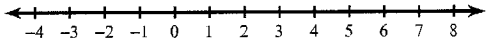
7) $|r| - 3 > 2$



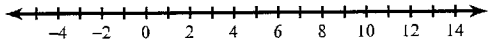
8) $|n| + 2 \geq 5$



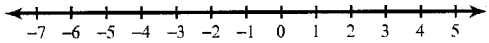
9) $|x-2| - 5 < -2$



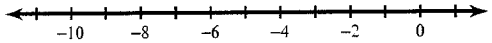
10) $|x-4| - 3 < 5$



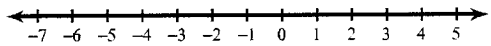
11) $1 + |1 + b| < 4$



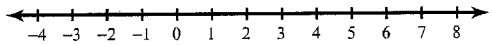
12) $|v+5| - 6 < -5$



13) $|10p - 4| < 34$

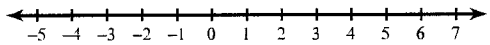


14) $|6 + 9x| \leq 24$

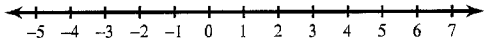


10

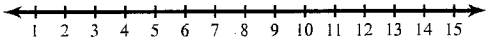
15) $|-8a-3|>11$



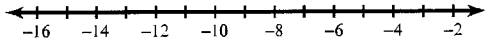
16) $|1-4k|\geq -11$



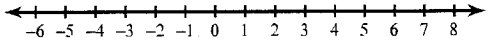
17) $9|m-8|-10<26$



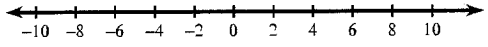
18) $9|x+8|+10<55$



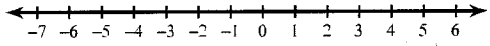
19) $9|r-2|-10<-73$



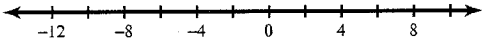
20) $7\left|\frac{n}{3}\right|-9<12$



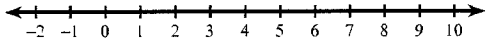
21) $2|10b+7|-1>73$



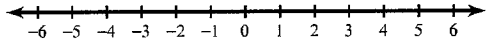
22) $7+|6v+7|\leq 60$



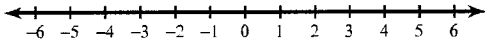
23) $4|6-2a|+8\leq 24$



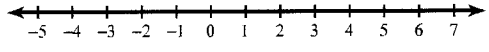
24) $9|3n-2|+6>51$



25) $3+4|3x+7|\geq -89$



26) $9|1+8n|-3\geq 78$



11

Worksheet-7 with Abs. Value: Piecewise Functions

Evaluate the function for the given value of x.

$f(x) = \begin{cases} 3, & \text{if } x \le 0 \\ 2, & \text{if } x > 0 \end{cases}$ $g(x) = \begin{cases} x + 5, & \text{if } x \le 3 \\ 2x - 1, & \text{if } x > 3 \end{cases}$ $h(x) = \begin{cases} \frac{1}{2}x - 4, & \text{if } x \le -2 \\ 3 - 2x, & \text{if } x > -2 \end{cases}$

1. $f(2)$ **2.** $f(-4)$ **3.** $f(0)$ **4.** $f\left(\frac{1}{2}\right)$

5. $g(7)$ **6.** $g(0)$ **7.** $g(-1)$ **8.** $g(3)$

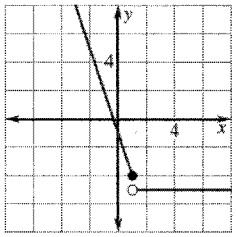
9. $h(-4)$ **10.** $h(-2)$ **11.** $h(-1)$ **12.** $h(6)$

Match the piecewise function with its graph.

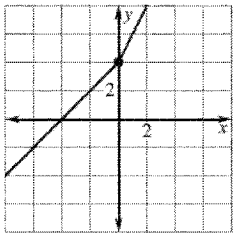
13. $f(x) = \begin{cases} x - 4, & \text{if } x \le 1 \\ 3x, & \text{if } x > 1 \end{cases}$ **14.** $f(x) = \begin{cases} x + 4, & \text{if } x \le 0 \\ 2x + 4, & \text{if } x > 0 \end{cases}$ **15.** $f(x) = \begin{cases} 3x - 2, & \text{if } x \le 1 \\ x + 2, & \text{if } x > 1 \end{cases}$

16. $f(x) = \begin{cases} 2x + 3, & \text{if } x \ge 0 \\ x + 4, & \text{if } x < 0 \end{cases}$ **17.** $f(x) = \begin{cases} 3x - 1, & \text{if } x \ge -1 \\ -5, & \text{if } x < -1 \end{cases}$ **18.** $f(x) = \begin{cases} -3x - 1, & \text{if } x \le 1 \\ -5, & \text{if } x > 1 \end{cases}$

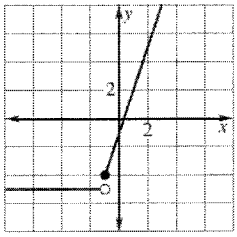
A.



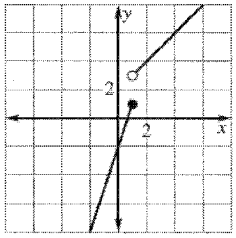
B.



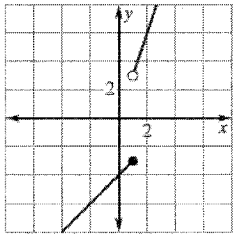
C.



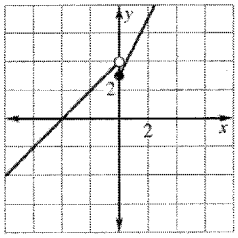
D.



E.



F.



Graph the function.

19. $f(x) = \begin{cases} x + 3, & \text{if } x \le 0 \\ 2x, & \text{if } x > 0 \end{cases}$

20. $f(x) = \begin{cases} x + 1, & \text{if } x < 0 \\ -x + 1, & \text{if } 0 \le x \le 2 \\ x - 1, & \text{if } x > 2 \end{cases}$

21. $f(x) = \begin{cases} 2, & \text{if } x \le -3 \\ -1, & \text{if } -3 < x < 3 \\ 3, & \text{if } x \ge 3 \end{cases}$

22. The admission rates at an amusement park are as follows.
Children 5 years old and under: free
Children between 5 years and 12 years, inclusive: $10.00
Children between 12 years and 18 years, inclusive: $25.00
Adults: $35.00

a) Write a piecewise function that gives the admission price for a given age.
b) Graph the function.

For each of the absolute value equations below, rewrite as a piecewise function.

1. $f(x)=|x-6|+7$

2. $f(x)=-|x+2|-1$

3. $f(x)=2|x-3|$

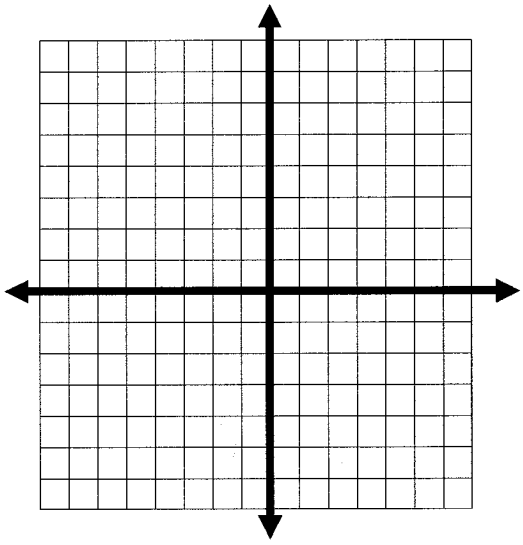
4. $f(x)=\frac{2}{3}|x-6|+3$

5. $f(x)=-|2x-10|+1$

6. $f(x)=5\left|-\frac{1}{2}x+3\right|$

Part I. Carefully graph each of the following. Identify whether or not the graph is continuous. Then, evaluate the graph at any specified domain value. You may use your calculators to help you graph, but you must sketch it carefully on the grid!

1. $f(x) = \begin{cases} x+5 & x < -2 \\ x^2 + 2x + 3 & x \geq -2 \end{cases}$



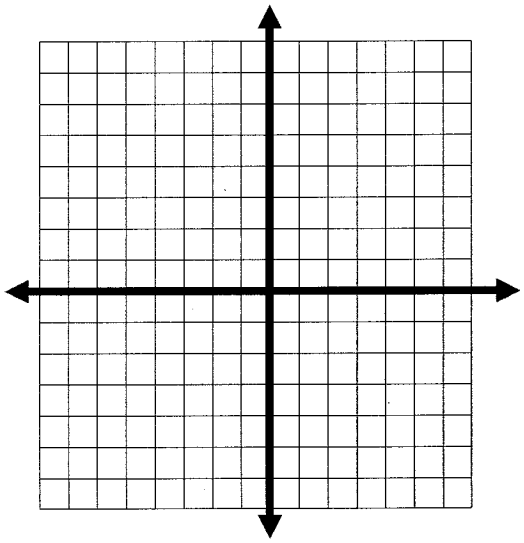
Continuous? Yes or No

$f(3) =$

$f(-4) =$

$f(-2) =$

2. $f(x) = \begin{cases} 2x+1 & x \geq 1 \\ x^2 + 3 & x < 1 \end{cases}$



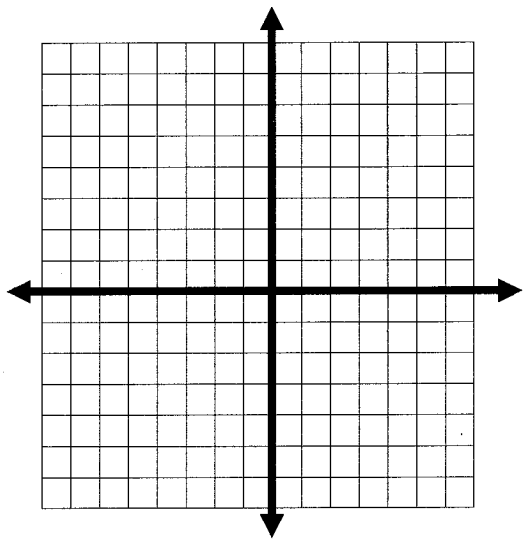
Continuous? Yes or No

$f(-2) =$

$f(6) =$

$f(1) =$

3. $f(x) = \begin{cases} x^2 - 1 & x \leq 0 \\ 2x - 1 & 0 < x \leq 5 \\ 3 & x > 5 \end{cases}$



Continuous? Yes or No

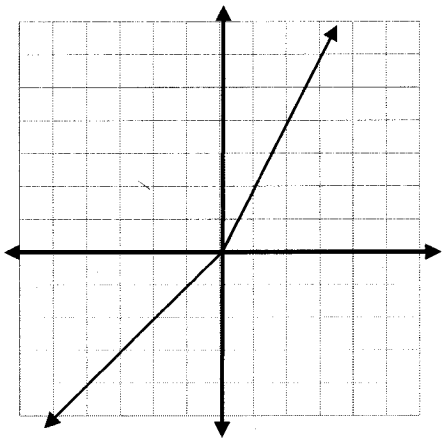
$f(-2) =$

$f(0) =$

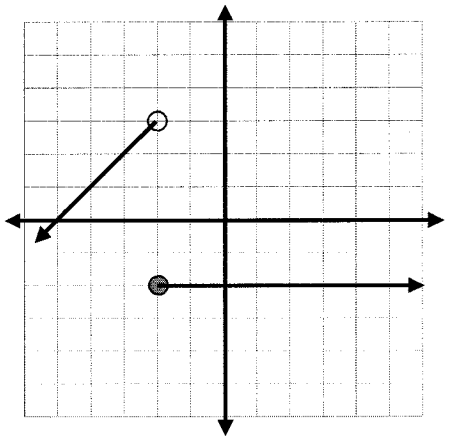
$f(5) =$

Part II. Write equations for the piecewise functions whose graphs are shown below. Assume that the units are 1 for every tic marc. Identify whether each graph is continuous.

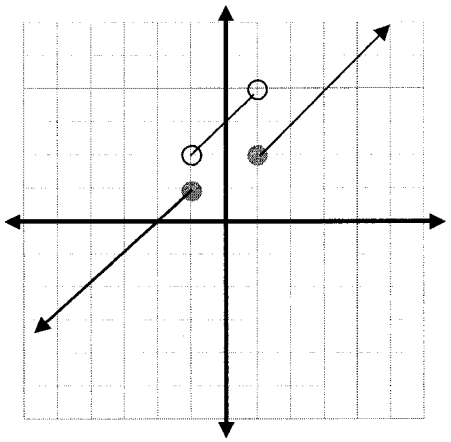
4.



5.



6.



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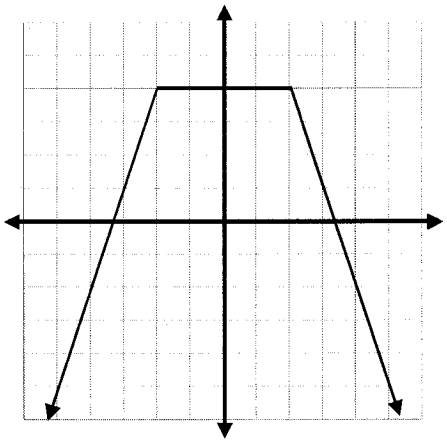

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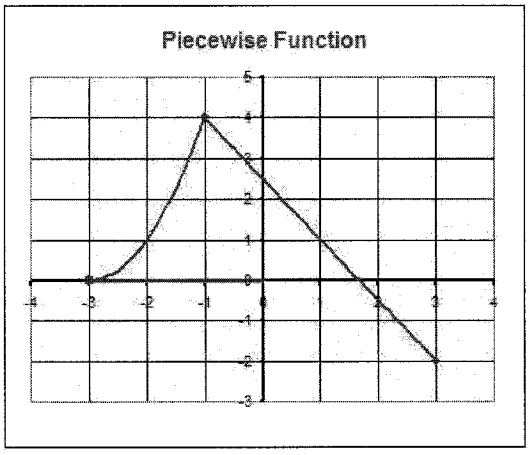

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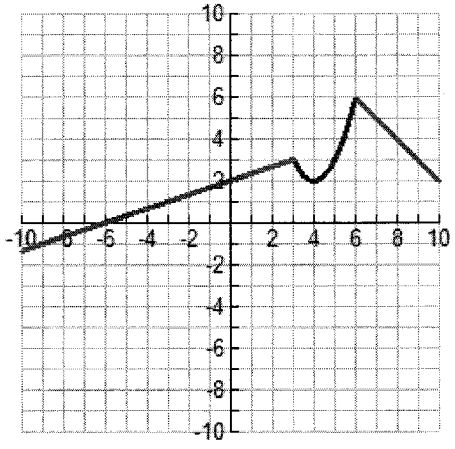


Honors Algebra II

Name _____

WS-9A: Step Functions

Unit 5B – Radical Relationships

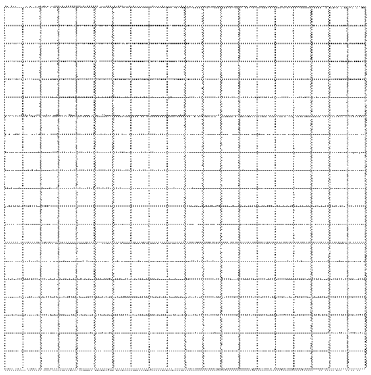
Part 1: Evaluate the following:

(1) [[7.1]] = _____ (2) [[1.8]] = _____ (3) [[π]] = _____

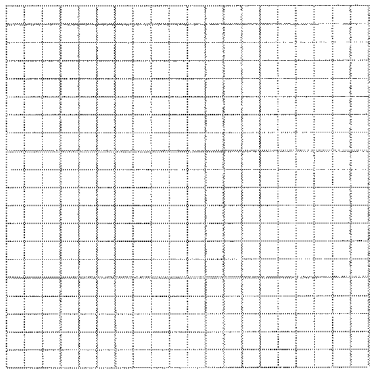
(4) [[-6.8]]= _____ (5) [[-2.1]] = _____ (6) [[0]] = _____

Part 2: Graph each of the following on the interval $-3 \le x \le 5$.

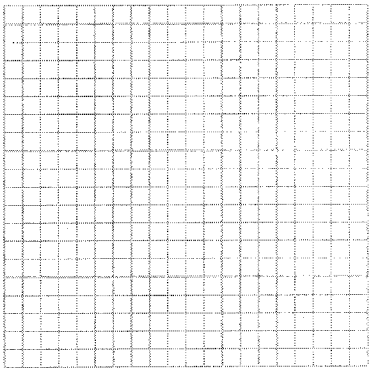
7. $f(x)=[\![x+3]\!]$



8. $f(x)=[\![2x-1]\!]$



9. $f(x)=\left[\!\left[-\frac{1}{2}x\right]\!\right]$



Part 3: Solve the following equations.

10. $[\![x+4]\!]+5=4$

11. $\left[\!\left[\frac{1}{2}x-1\right]\!\right]+4=0$

12. $[\![-4x-9]\!]=-5$

13. $-[\![x-5]\!]=15$

14. $\frac{1}{3}[\![x+4]\!]=8$

15. $-2[\![x-5]\!]+4=18$

Honors Algebra II

Name _____

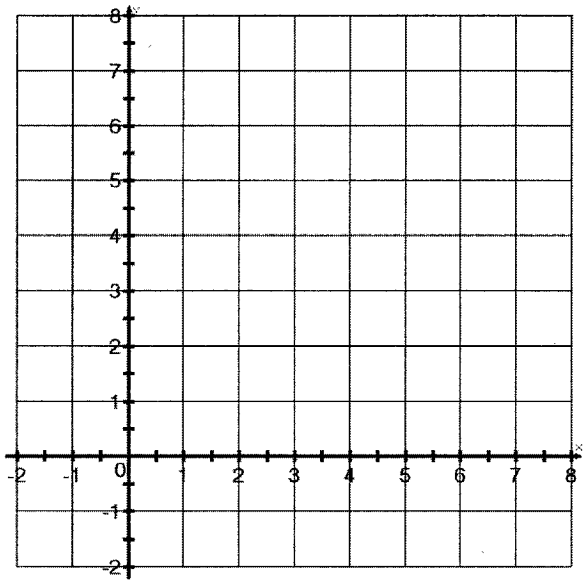
WS – 9B: Graphing Step Functions

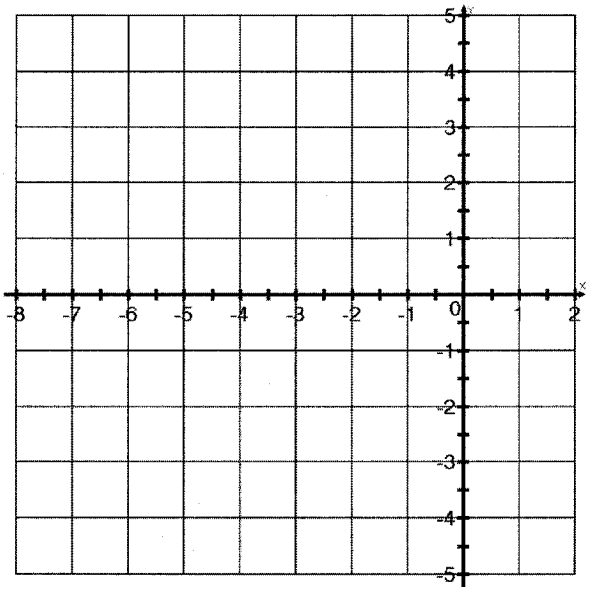
Unit 5B – Radical Relationships

Describe the transformations for each of the following and graph.

1. $f(x)=-\left[\!\left[\frac{1}{2}x-2\right]\!\right]+4$

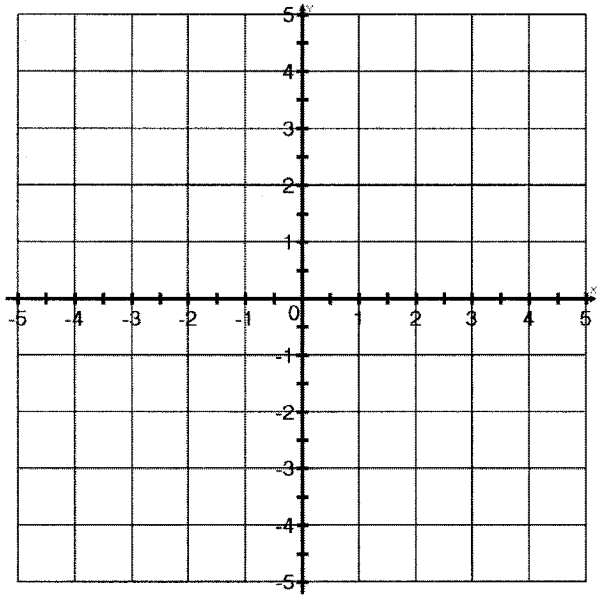
2. $f(x)=2[\![x+4]\!]-2$

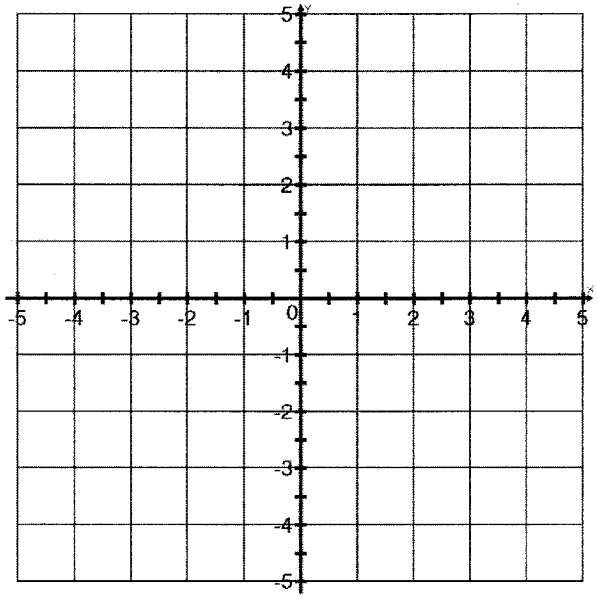




3. $f(x)=\frac{1}{2}[\![x]\!]-3$

4. $f(x)=-[\![2x+3]\!]-1$





Honors Algebra II **Name** _____

Unit 5B Review – Radicals, Absolute Value, Piecewise, and Step Functions

1. Simplifying Radicals
   a. $4x^2y^4\sqrt[3]{144x^5y^7}$

2. Multiplying and Dividing Radicals
   a. $\sqrt[4]{2250x^5y} \cdot \sqrt[4]{540xy^3}$
   b. $\sqrt[3]{\frac{2250x^5y}{540xy^3}}$
   c. $\sqrt[3]{16} \cdot \sqrt[4]{64}$

3. Adding and Subtracting Rationals and Radicals
   a. $\sqrt[3]{40x^4} - \sqrt[3]{27x} + 3\sqrt[3]{8x}$

4. Solving Radicals and Absolute Value functions (check for excluded values or extraneous solutions)
   a. $6\sqrt{5-c} - 7 = 11$
   b. $\sqrt{15x+10} = 2x+3$
   c. $\sqrt{-x-1} = x+1$
   d. $\sqrt[3]{5x+2} = -4$
   e. $-2|x-5|+1 = -5$

5. Graphing Radicals and Absolute Values with Transformations (without Calculator)
   a. $\sqrt{x-5}+2$
   b. $-\sqrt{-x}-3$
   c. $-\sqrt[3]{x+3}-4$
   d. $2|x-4|+1$
   e. $-\frac{1}{3}|x+2|+6$

6. Solving and Graphing Inequalities
   a. $\sqrt{x+7}-8 \leq -3$
   b. $3|x-1| \geq -6$

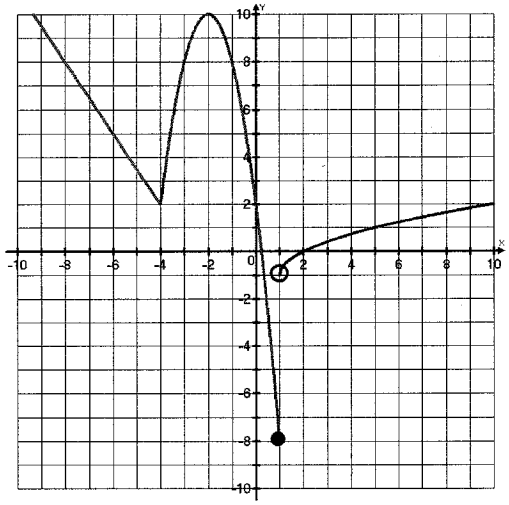
7. Greatest Integer and Step Functions
   a. Evaluate $[\![x]\!]$ for 3.7, 0.8, -2.9, π, and $-\sqrt{5}$.
   b. Graph (without calculator) $f(x) = -3[\![x]\!] - 4$

8. Graph and Evaluate Piecewise functions.

   a. Graph (without calculator) $f(x) = \begin{cases} 2x+3 & x < -1 \\ -(x-3)^2 + 1 & -1 \le x \le 5 \\ -3 & x > 5 \end{cases}$

   b. Evaluate f(x) for -2, -1, 2, 5, and 7.

   c. Write the equation for the following graph:



9. Verifying Inverses

   a. Verify that $f(x) = \frac{1}{2}\sqrt{x+2}$ and $g(x) = 4x^2 - 2$ are inverses.

10. Find the inverse of the following functions. Also find the domain and range of both the original function and the inverse.

    a. $m(x) = 5\sqrt{3x+1} - 4$

    b. $f(x) = -\frac{1}{3}\sqrt[3]{x-4} + 2$

    c. $j(x) = -\sqrt{-\frac{1}{3}x - 2} + 7$

11. Write Absolute Value Functions as a Piecewise Function

    a. $g(x) = \frac{1}{4}|x-8| + 6$

    b. $f(x) = -5\left|\frac{1}{3}x + 2\right| - 1$

    c. $j(x) = -\frac{2}{5}|-3x - 9|$