Honors Algebra II
Unit 5B, Quiz 2

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Name AK

1. **Solve the following equations and inequalities.**

a. $3|3x-2|-4=11$

$3|3x-2|=15$

$|3x-2|=5$

$3x-2=5$ $\quad 3x-2=-5$

$3x=7$ $\quad 3x=-3$

$x=\frac{7}{3}, -1$

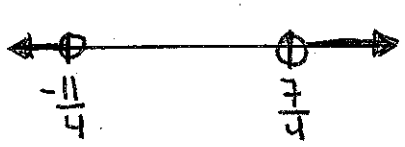
b. $-\frac{1}{3}|4x+2|<-3$

$|4x+2|>9$

$4x+2=9$ $\quad 4x+2=-9$

$4x=7$ $\quad 4x=-11$

$x=\frac{7}{4}$ $\quad x=-\frac{11}{4}$



$(-\infty, -\frac{11}{4}) \cup (\frac{7}{4}, \infty)$

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2. **Evaluate the following piecewise function:** $f(x)=\begin{cases} x^2-2x & x<-3 \\ 5-4x & -3\le x\le 2 \\ 6 & x>2 \end{cases}$

a. f(-4) = 24 b. f(-3) = 17 c. f(0)= 5 d. f(2) = -3 e. f(5) = 6

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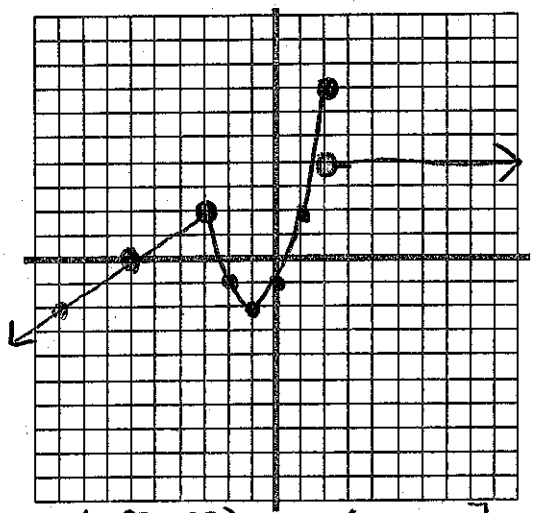
3. **Graph the following functions.**

a. $f(x)=\begin{cases} \frac{2}{3}x+4 & x<-3 \\ (x+1)^2-2 & -3\le x\le 2 \\ 4 & x>2 \end{cases}$ (-3, 2)



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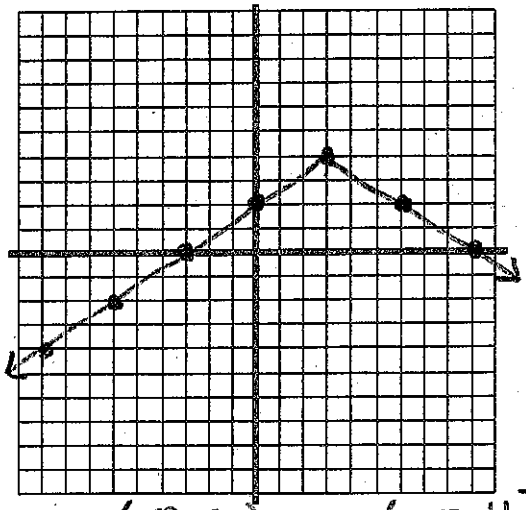
Domain: $(-\infty, \infty)$ Range: $(-\infty, 7]$

b. $g(x)=-2\left|\frac{1}{3}x-1\right|+4$

$-2\left|\frac{1}{3}(x-3)\right|+4$



6

Domain: $(-\infty, \infty)$ Range: $(-\infty, 4]$

X-Int: $(-3,0)(9,0)$ Y-Int: $(0,2)$

Int of Inc: $(-\infty, 3)$ Int of Dec: $(3, \infty)$

End Behavior: As $x \to -\infty$, $g(x) \to -\infty$

As $x \to \infty$, $g(x) \to -\infty$

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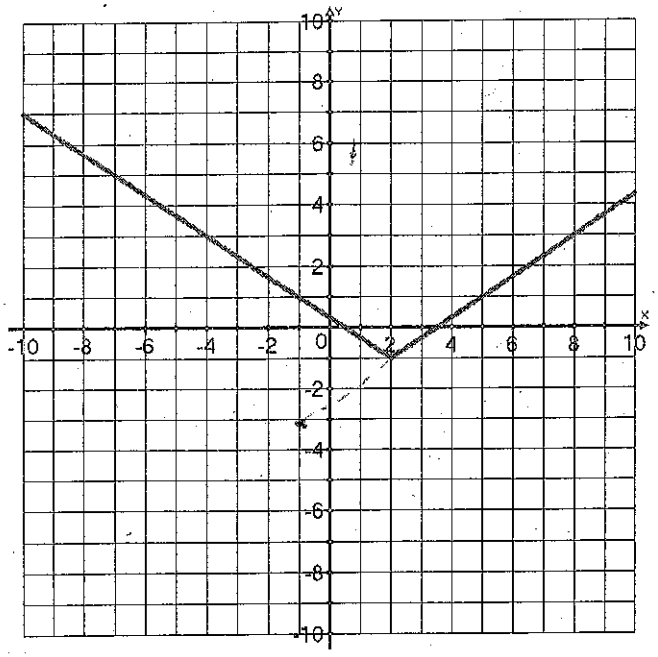
4. **Write the equation for the following graphs.**

a.



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$f(x) = \frac{2}{3}|x-2|-1$

or

$2\left|\frac{1}{3}(x-2)\right|-1$

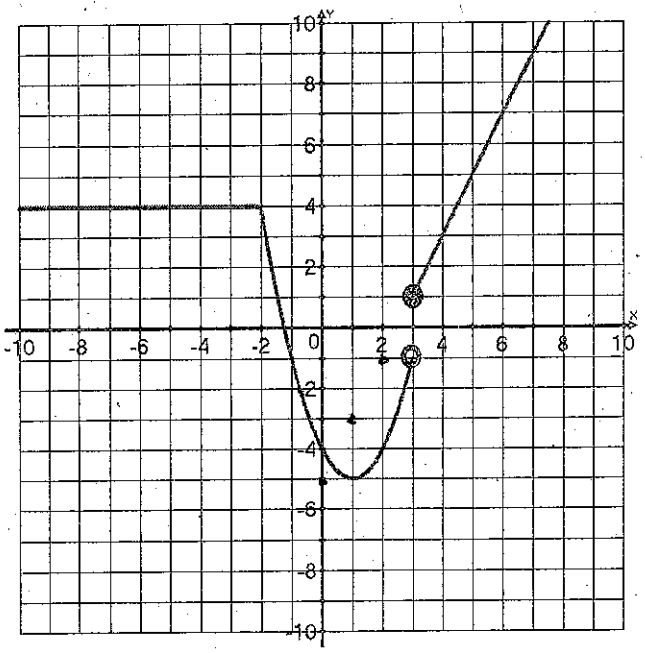
or

$2\left|\frac{1}{3}x-\frac{2}{3}\right|-1$

or

$\begin{cases} -\frac{2}{3}x+\frac{1}{3}, & x<2 \\ \frac{2}{3}x-\frac{7}{3}, & x\geq 2 \end{cases}$

b.



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$g(x) = \begin{cases} 4, & \text{if } x\leq -2 \\ (x-1)^2-5, & \text{if } -2<x<3 \\ 2x-5, & \text{if } x\geq 3 \end{cases}$

Bonus: Solve $4\left[\left[\frac{2x}{5}\right]\right]+3=-5$

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$4\left[\left[\frac{2x}{5}\right]\right]=-8$

$\left[\left[\frac{2x}{5}\right]\right]=-2$

$-2\leq\frac{2x}{5}<-1$

$-10\leq 2x<-5$

$-5\leq x<-\frac{5}{2}$

$\left[-5,-\frac{5}{2}\right)$

or

$[-5,-2.5)$