

For each polynomial function, identify the given characteristics. Then sketch a possible graph of the polynomial.

1. $f(x) = x^4 - 5x^2 + 4$ $(x^2 - 4)(x^2 - 1)$
 $(x - 2)(x + 2)(x - 1)(x + 1)$

Degree: 4

y-intercept: (0, 4)

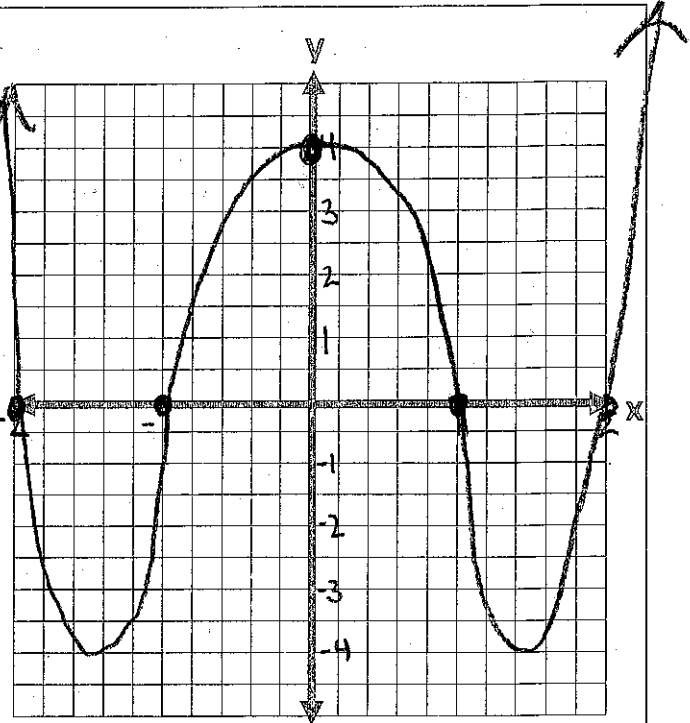
maximum number of turns: 3

sign of leading coefficient: +

end behavior: As $x \rightarrow -\infty$, $f(x) \rightarrow \infty$

As $x \rightarrow \infty$, $f(x) \rightarrow \infty$

Real Zeros: $x = -2$, $x = -1$, $x = 1$, $x = 2$
m.1 m.1 m.1 m.1



2. $f(x) = -x^2(x - 5)^2(x + 3)$

Degree: 5

y-intercept: (0, 0)

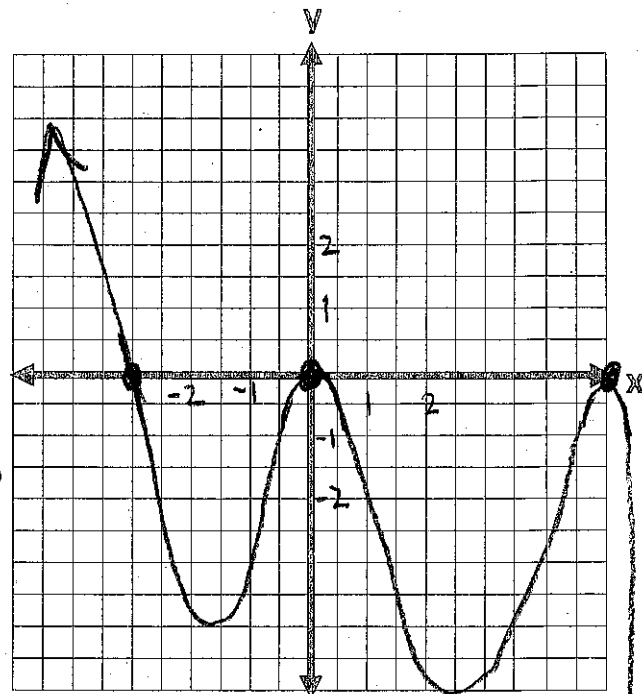
maximum number of turns: 4

sign of leading coefficient: -

end behavior: As $x \rightarrow -\infty$, $f(x) \rightarrow \infty$

As $x \rightarrow \infty$, $f(x) \rightarrow -\infty$

Real Zeros: $x = 0$, $x = 5$, $x = -3$
m.2 m.2 m.1



3. $f(x) = 4x^3 - 36x$ $4x(x^2 - 9)$
 $4x(x-3)(x+3)$

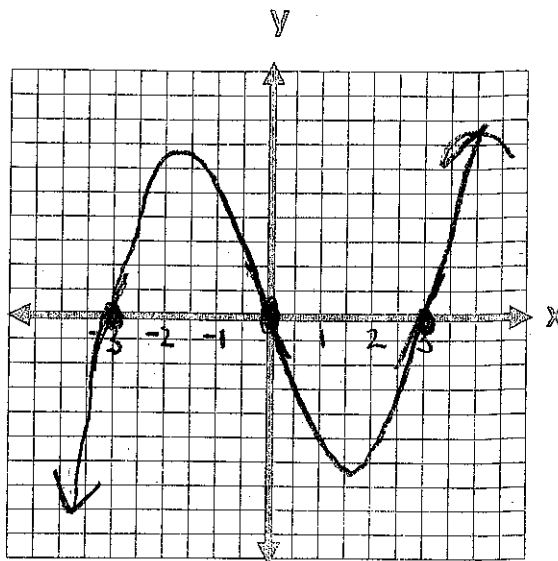
Degree: 3
 y-intercept: (0, 0)

maximum number of turns: 2

sign of leading coefficient: +

end behavior: As $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$
As $x \rightarrow \infty$, $f(x) \rightarrow \infty$

Zeros: $x=0$, $x=3$, $x=-3$
m.1, m.1, m.1



4. $f(x) = -3(x-2)(x+5)^2(x-1)^3(x+6)$

Degree: 7

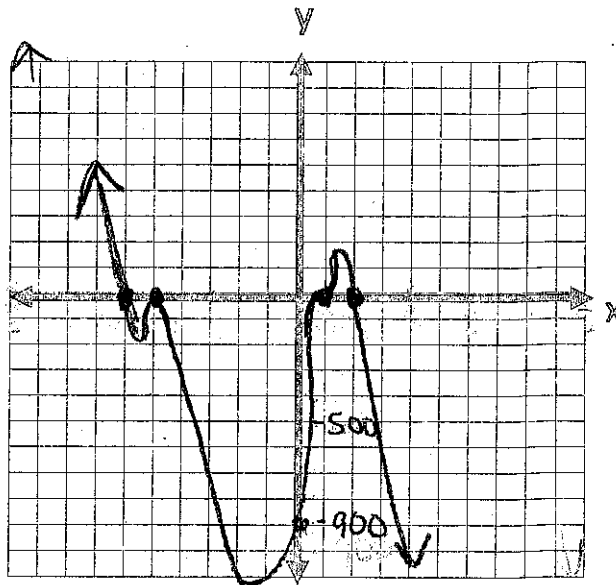
y-intercept: (0, -900)

maximum number of turns: 6

sign of leading coefficient: -

end behavior: As $x \rightarrow -\infty$, $f(x) \rightarrow \infty$
As $x \rightarrow \infty$, $f(x) \rightarrow -\infty$

Real Zeros: $x=2$, $x=-5$, $x=1$, $x=-6$
m.1, m.2, m.3, m.1



5. $g(x) = -2(x+1)(x-4)^2(x+8)(x-2)^2$

Degree: 6

y-intercept: (0, -1024)

maximum number of turns: 5

sign of leading coefficient: -

end behavior: As $x \rightarrow -\infty$, $g(x) \rightarrow -\infty$
As $x \rightarrow \infty$, $g(x) \rightarrow -\infty$

Real Zeros: $x=-1$, $x=4$, $x=-8$, $x=2$
m.1, m.2, m.1, m.2

