

Practice 2.3 Graphing Polynomials (By hand)

For each polynomial function:

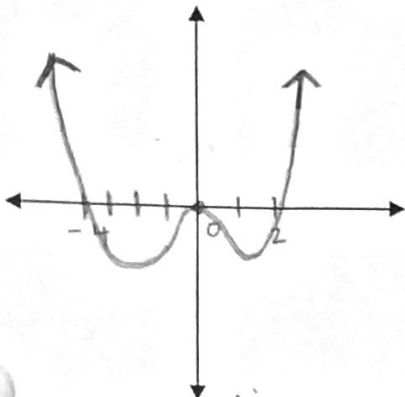
- a.) State the degree of the polynomial and whether the leading coefficient is positive or negative
- b.) List all the zeros and their multiplicity
- c.) Sketch the graphs with all zeros clearly identified

Quartic

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

y-int (0,0)

L.C. = +1 Zeros: 0 mult. 2
2 mult. 1
-4 mult. 1
degree: 4



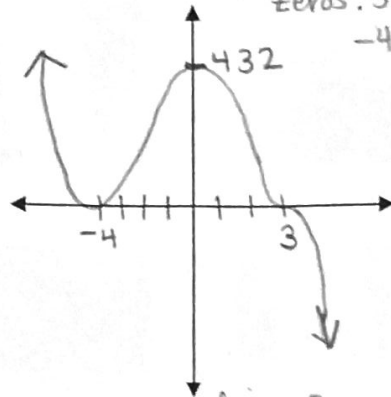
R.E.B. $\lim_{x \rightarrow \infty} f(x) = \infty$
L.E.B. $\lim_{x \rightarrow -\infty} f(x) = \infty$

Quintic

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

y-int (0, 432)

L.C. = -1
degree = 5



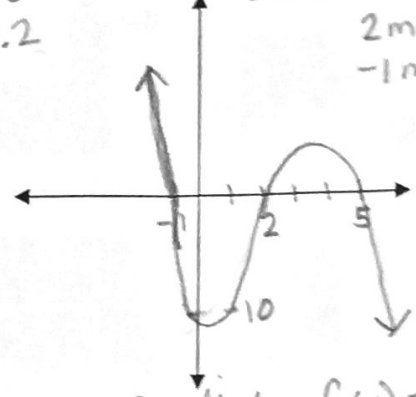
R.E.B. $\lim_{x \rightarrow \infty} f(x) = -\infty$
L.E.B. $\lim_{x \rightarrow -\infty} f(x) = \infty$

Cubic

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

y-int (0, -10)

L.C. = -1
degree = 3



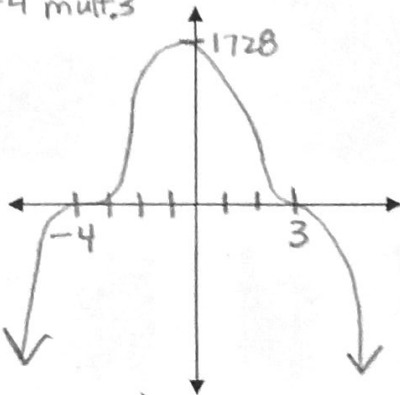
R.E.B. $\lim_{x \rightarrow \infty} f(x) = -\infty$
L.E.B. $\lim_{x \rightarrow -\infty} f(x) = \infty$

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

y-int (0, 1728)

L.C. = -1
degree = 6

6th degree polynomial
Zeros: 3 mult. 3
-4 mult. 3



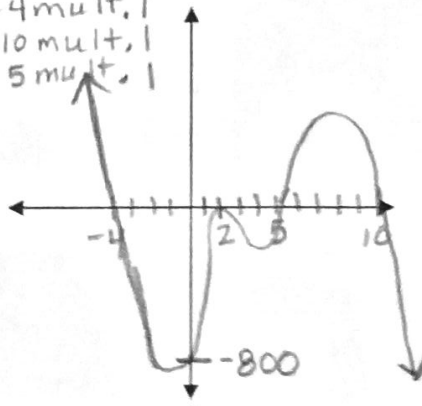
R.E.B. $\lim_{x \rightarrow \infty} f(x) = -\infty$
L.E.B. $\lim_{x \rightarrow -\infty} f(x) = -\infty$

5.) $f(x) = (2-x)^2(x+4)(x-10)(5-x)$

y-int (0, -800)

L.C. = -1
degree = 5

Quintic
Zeros: 2 mult. 2
-4 mult. 1
10 mult. 1
5 mult. 1



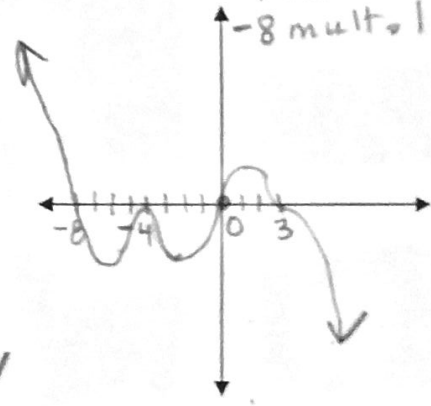
R.E.B. $\lim_{x \rightarrow \infty} f(x) = -\infty$
L.E.B. $\lim_{x \rightarrow -\infty} f(x) = \infty$

6.) $f(x) = -2x(x-3)^3(x+4)^2(x+8)$

y-int (0, 0)

L.C. = -2

Zeros: 0 mult. 1
3 mult. 3
-4 mult. 2
-8 mult. 1



R.E.B. $\lim_{x \rightarrow \infty} f(x) = -\infty$
L.E.B. $\lim_{x \rightarrow -\infty} f(x) = -\infty$