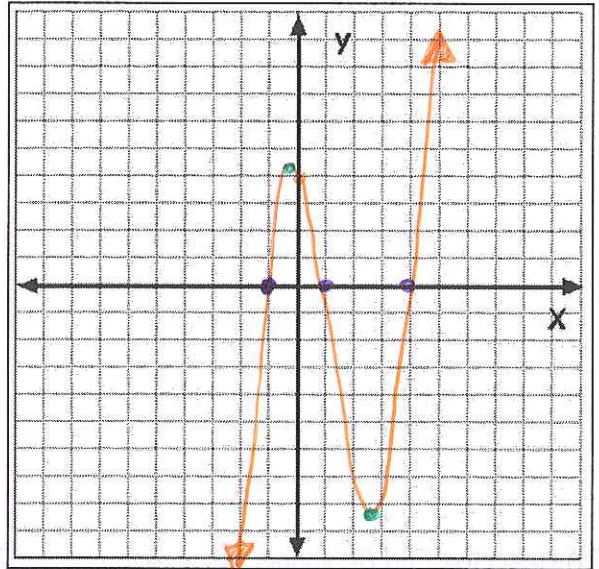


For each polynomial, complete the following:

- Use the Leading Coefficient Test to describe the end behavior.
- Use your graphing calculator to locate one of the zeros. Then, find all remaining Zeros. All non-integer zeros must be written as improper fractions. You must show all work & checks for these!
- Write the polynomial in factored form.
- Sketch the graph of the polynomial. (You must include the y-intercept, all zeros, any relative minima/maxima, and the basic shape using the Leading Coefficient Test).

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

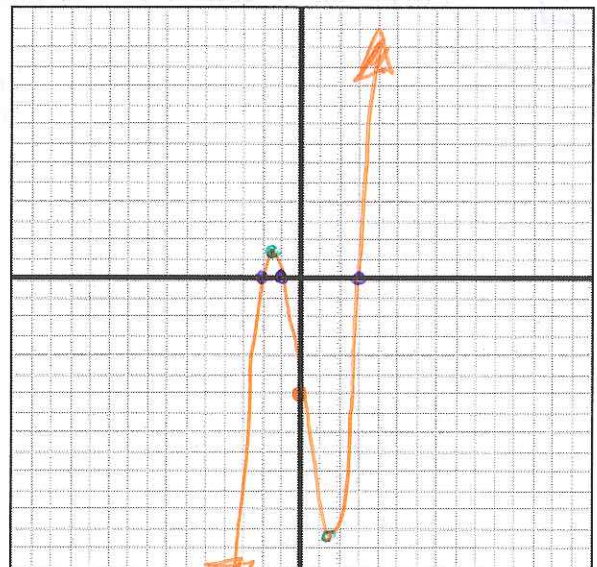


(a) Describe End Behavior: As $x \rightarrow \infty$, ∞ . And as $x \rightarrow -\infty$, $-\infty$.

(b) Zeros: $x = -1, 1, 4$ (c) Product of Linear Factors: $(x+1)(x-1)(x-4)$

(d) Relative Minima/Maxima: $(-0.12, 4.06)$ $(2.79, -8.21)$

2.) $f(x) = x^3 - 7x - 6$



(a) Describe End Behavior: As $x \rightarrow \infty$, ∞ . And as $x \rightarrow -\infty$, $-\infty$.

(b) Zeros: $x = -2, -1, 3$ (c) Product of Linear Factors: $(x+2)(x+1)(x-3)$

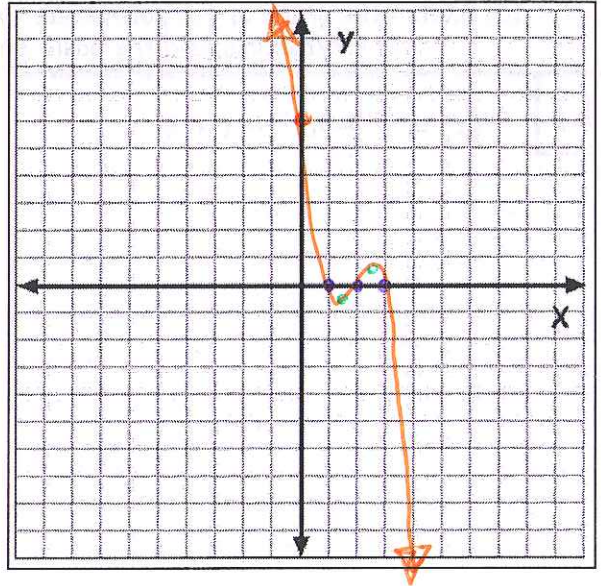
(d) Relative Minima/Maxima: $(-1.53, 1.13)$ $(1.53, -13.13)$

For each polynomial, complete the following:

- Use the Leading Coefficient Test to describe the end behavior.
- Use your graphing calculator to locate one of the zeros. Then, find all remaining Zeros. All non-integer zeros must be written as improper fractions. You must show all work & checks for these!
- Write the polynomial in factored form.
- Sketch the graph of the polynomial. (You must include the y-intercept, all zeros, any relative minima/maxima, and the basic shape using the Leading Coefficient Test).

3.)

$$f(x) = -x^3 + 6x^2 - 11x + 6$$



(a) Describe End Behavior: As $x \rightarrow \infty$, $-\infty$. And as $x \rightarrow -\infty$, ∞ .

(b) Zeros: $x=1, 2, 3$ (c) Product of Linear Factors: $(x-1)(x-2)(x-3)$

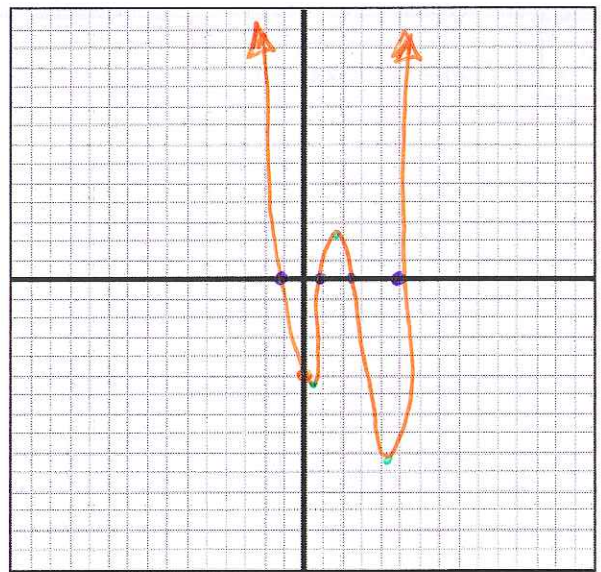
(d) Relative Minima/Maxima: $(1.42, -0.39)$ $(2.58, 0.38)$

4.)

$$f(x) = 2x^4 - 15x^3 + 23x^2 + 15x - 25$$

Note: you may need to change the scale on the y-axis.

*y-axis * by 5's*



(a) Describe End Behavior: As $x \rightarrow \infty$, ∞ . And as $x \rightarrow -\infty$, ∞ .

(b) Zeros: $x = -1, 1, 5/2, 5$ (c) Product of Linear Factors: $(x+1)(x-1)(2x-5)(x-5)$

(d) Relative Minima/Maxima: $(-0.26, -27.07)$ $(1.76, 10.06)$ $(4.12, -45.56)$