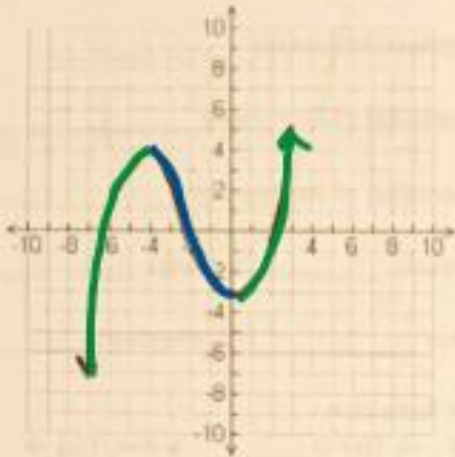


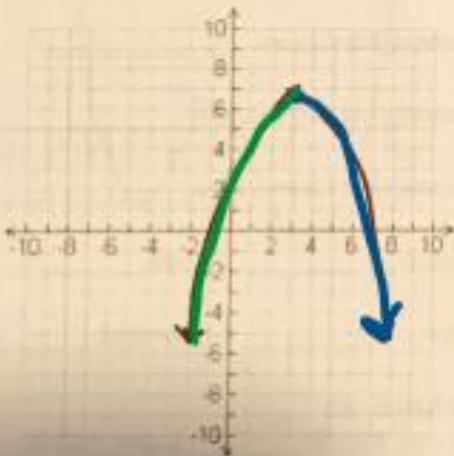
Characteristics of Polynomial Graphs Practice

1.



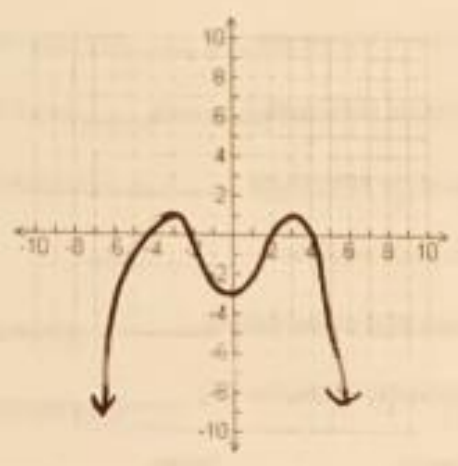
Relative Maximum (-4, 4)
 Relative Minimum (0, -4)
 Absolute Maximum None
 Absolute Minimum None
 Interval(s) of Increasing $(-\infty, -4)$ $(0, \infty)$
 Interval(s) of Decreasing $(-4, 0)$
 Domain $(-\infty, \infty)$ Range $(-\infty, \infty)$
 Zeros $(-2, 0)$ $(2, 0)$ Y-Intercept $(0, -3)$
 End Behavior:
 $x \rightarrow -\infty, f(x) \rightarrow -\infty$ $x \rightarrow \infty, f(x) \rightarrow \infty$
 # of Extrema 2

2.



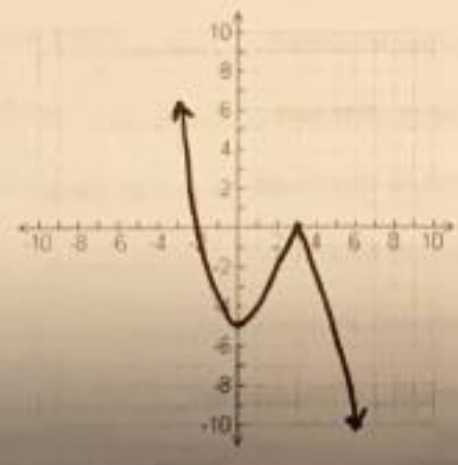
Relative Maximum None
 Relative Minimum None
 Absolute Maximum (3, 7)
 Absolute Minimum None
 Interval(s) of Increasing $(-\infty, 3)$
 Interval(s) of Decreasing $(3, \infty)$
 Domain $(-\infty, \infty)$ Range $[-\infty, 7]$
 Zeros $(-1, 0)$ $(7, 0)$ Y-Intercept $(0, 2)$
 End Behavior:
 $x \rightarrow -\infty, f(x) \rightarrow -\infty$ $x \rightarrow \infty, f(x) \rightarrow -\infty$
 # of Extrema 1

3.



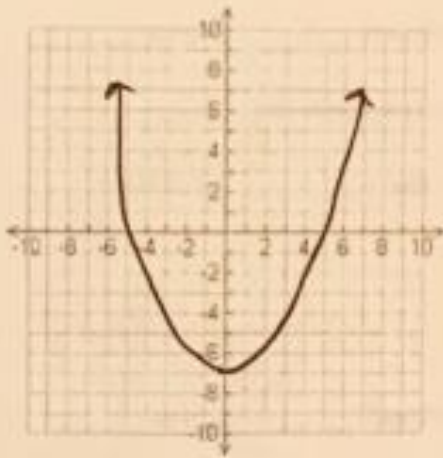
Relative Maximum None
 Relative Minimum (0, -3)
 Absolute Maximum (-3, 1) (3, 1)
 Absolute Minimum None
 Interval(s) of increasing $(-\infty, -3) \cup (0, 3)$
 Interval(s) of Decreasing $(-3, 0) \cup (3, \infty)$
 Domain $(-\infty, \infty)$ Range $(-\infty, 1]$
 Zeros (-4, 0) (2, 0) Y-Intercept (0, -3)
(-2, 0) (4, 0)
 End Behavior:
 $x \rightarrow -\infty, f(x) \rightarrow -\infty$ $x \rightarrow \infty, f(x) \rightarrow -\infty$
 # of Extrema 3

4.



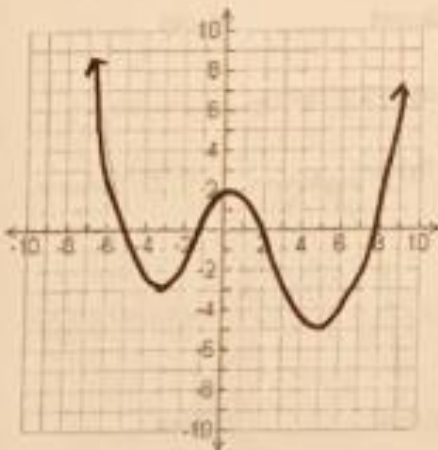
Relative Maximum (3, 0)
 Relative Minimum (0, -4)
 Absolute Maximum None
 Absolute Minimum None
 Interval(s) of Increasing (0, 3)
 Interval(s) of Decreasing $(-\infty, 0) \cup (3, \infty)$
 Domain $(-\infty, \infty)$ Range $(-\infty, \infty)$
 Zeros (-2, 0) (3, 0) Y-Intercept (0, -5)
 End Behavior:
 $x \rightarrow -\infty, f(x) \rightarrow \infty$ $x \rightarrow \infty, f(x) \rightarrow -\infty$
 # of Extrema 2

5.



Relative Maximum None
 Relative Minimum None
 Absolute Maximum None
 Absolute Minimum (0, -7)
 Interval(s) of Increasing (0, ∞)
 Interval(s) of Decreasing (-∞, 0)
 Domain (-∞, ∞) Range [-7, ∞)
 Zeros (-5, 0) (5, 0) -Intercept (0, -7)
 End Behavior:
 $x \rightarrow -\infty, f(x) \rightarrow \infty$ $x \rightarrow \infty, f(x) \rightarrow \infty$
 # of Extrema 1

6.



Relative Maximum (0, 2)
 Relative Minimum (3, -3)
 Absolute Maximum None
 Absolute Minimum (3, -5)
 Interval(s) of Increasing (-3, 0) ∪ (5, ∞)
 Interval(s) of Decreasing (-∞, -3) ∪ (0, 5)
 Domain (-∞, ∞) Range [-5, ∞)
 Zeros (-5, 0) (0, 0) (5, 0) Y-Intercept (0, 2)
 End Behavior:
 $x \rightarrow -\infty, f(x) \rightarrow \infty$ $x \rightarrow \infty, f(x) \rightarrow \infty$
 # of Extrema 3

Identify the characteristics for the following polynomials:

1. $f(x) = -x^4 - 3 + 7x^3$ ↻
Standard form $f(x) = -x^4 + 7x^3 - 3$ Leading Coefficient -1 Degree 4
of Zeros 4 Classify by degree quartic Classify by # of terms trinomial
End Behavior: as $x \rightarrow +\infty$, $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$ # of Turns 3

2. $f(x) = 3x + 4x^2$ ↻
Standard form $f(x) = 4x^2 + 3x$ Leading Coefficient 4 Degree 2
of Zeros 2 Classify by degree quadratic Classify by # of terms binomial
End Behavior: as $x \rightarrow +\infty$, $f(x) \rightarrow \infty$ as $x \rightarrow -\infty$, $f(x) \rightarrow \infty$ # of Turns 1

3. $f(x) = 6x - x + 5x^3$ ↻
Standard form $f(x) = 5x^3 + 5x$ Leading Coefficient 5 Degree 3
of Zeros 3 Classify by degree cubic Classify by # of terms 2
End Behavior: as $x \rightarrow +\infty$, $f(x) \rightarrow \infty$ as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$ # of Turns 2

4. $f(x) = -3x$ ↻
Standard form -3x Leading Coefficient -3 Degree 1
of Zeros 1 Classify by degree linear Classify by # of terms monomial
End Behavior: as $x \rightarrow +\infty$, $f(x) \rightarrow \infty$ as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$ # of Turns 0

Unit 2 Polynomials: Review – Characteristics of Polynomials

Identify the characteristics for the following polynomials:

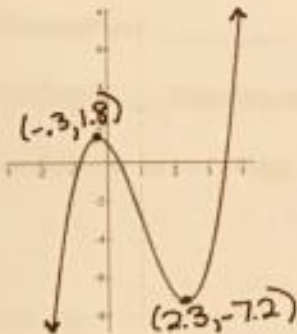
Monomial
binomial
trinomial
polynomial

1. $f(x) = -x^3 - 2x^4 + x + 3$ \curvearrowright
 Standard form $f(x) = -2x^4 - x^3 + x + 3$ Leading Coefficient -2 Degree 4
 # of Zeros 4 Classify by degree quartic Classify by # of terms polynomial
 End Behavior: as $x \rightarrow +\infty$, $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$, $f(x) \rightarrow \infty$ # of Turns 3

2. $f(x) = 3x - 5 + x^2$ \uparrow
 Standard form $f(x) = x^2 + 3x - 5$ Leading Coefficient 1 Degree 2
 # of Zeros 2 Classify by degree quadratic Classify by # of terms trinomial
 End Behavior: as $x \rightarrow +\infty$, $f(x) \rightarrow \infty$ as $x \rightarrow -\infty$, $f(x) \rightarrow \infty$ # of Turns 1

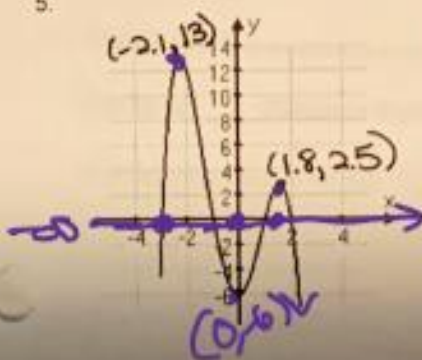
3. $f(x) = 4x$ \leftarrow
 Standard form $f(x) = 4x$ Leading Coefficient 4 Degree 1
 # of Zeros 1 Classify by degree linear Classify by # of terms monomial
 End Behavior: as $x \rightarrow +\infty$, $f(x) \rightarrow \infty$ as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$ # of Turns 0

4.



Domain $(-\infty, \infty)$ Absolute Maximum None
 Range $(-\infty, \infty)$ Absolute Minimum None
 Zero(s) $(-0.8, 0)$ $(0.5, 0)$ $(3.5, 0)$ Int. of Increasing $(-\infty, -3)$ $(2.3, \infty)$
 Y-intercept $(0, 1)$ Int. of Decreasing $(-3, 2.3)$
 # of Extrema 2 End Behavior:
 Relative Maximum $(-0.3, 1.8)$ as $x \rightarrow +\infty$, $f(x) \rightarrow \infty$
 Relative Minimum $(2.3, -7.2)$ as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$

5.



Domain $(-\infty, \infty)$ Absolute Maximum $(-2.1, 13)$
 Range $(-\infty, 13]$ Absolute Minimum None
 Zero(s) $(-3, 0)$ $(-1, 0)$ $(1, 0)$ $(2, 0)$ Int. of Increasing $(\infty, -2.1) \cup (1.8, \infty)$
 Y-intercept $(0, -6)$ Int. of Decreasing $(-2.1, 1.8)$
 # of Extrema 2 End Behavior:
 Relative Maximum $(-2.1, 13)$ as $x \rightarrow \infty$, $f(x) \rightarrow \infty$
 Relative Minimum $(1.8, 2.5)$ as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$