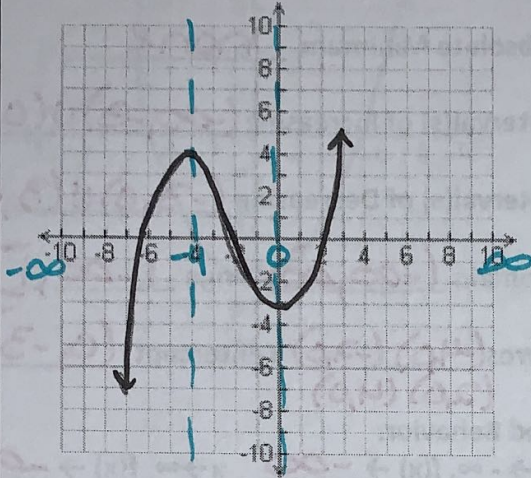


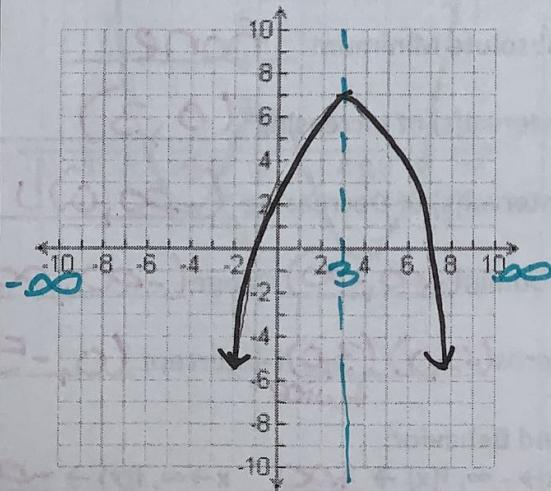
Characteristics of Polynomial Graphs Practice

1.



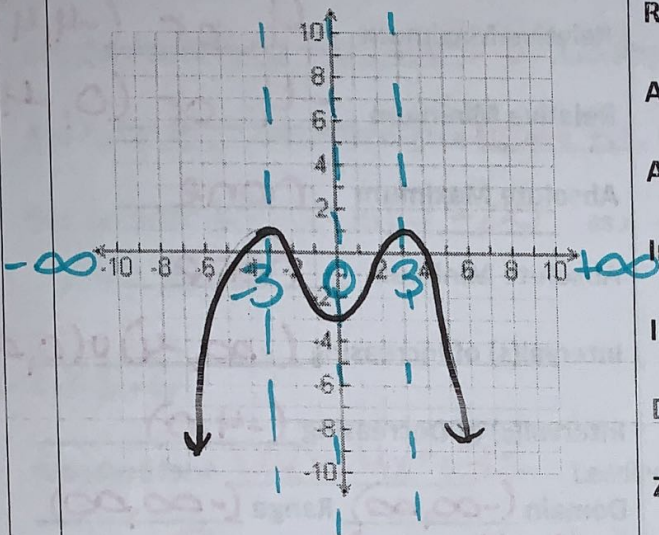
Relative Maximum 4 or (-4, 4)
 Relative Minimum -3 or (0, -3)
 Absolute Maximum none
 Absolute Minimum none
 Interval(s) of Increasing $(-\infty, -4) \cup (0, \infty)$
 Interval(s) of Decreasing $(-4, 0)$
 Domain $(-\infty, \infty)$ Range $(-\infty, \infty)$
 Zeros $(-6, 0)$ $(2, 0)$ Y-Intercept $(0, -3)$
 End Behavior:
 $x \rightarrow -\infty, f(x) \rightarrow -\infty$ $x \rightarrow \infty, f(x) \rightarrow \infty$
 # of Extrema 2

2.



Relative Maximum 7 or (3, 7)
 Relative Minimum none
 Absolute Maximum 7 or (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

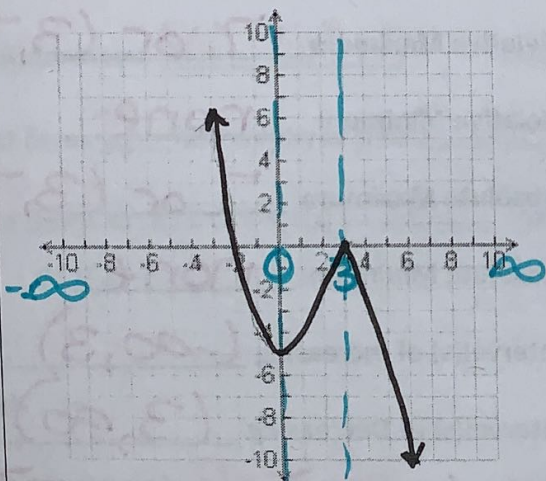
3.

Relative Maximum 1 or $(-3, 1) + (3, 1)$ Relative Minimum -3 or $(0, -3)$ Absolute Maximum 1 or $(-3, 1) + (3, 1)$ Absolute Minimum noneInterval(s) of Increasing $(-\infty, -3) \cup (0, 3)$ Interval(s) of Decreasing $(-3, 0) \cup (3, \infty)$ Domain $(-\infty, \infty)$ Range $(-\infty, 1]$ Zeros $(-4, 0)$ $(-2, 0)$ $(2, 0)$ $(4, 0)$ Y-Intercept $(0, -3)$

End Behavior:

 $x \rightarrow -\infty, f(x) \rightarrow -\infty$ $x \rightarrow \infty, f(x) \rightarrow -\infty$ # of Extrema 3

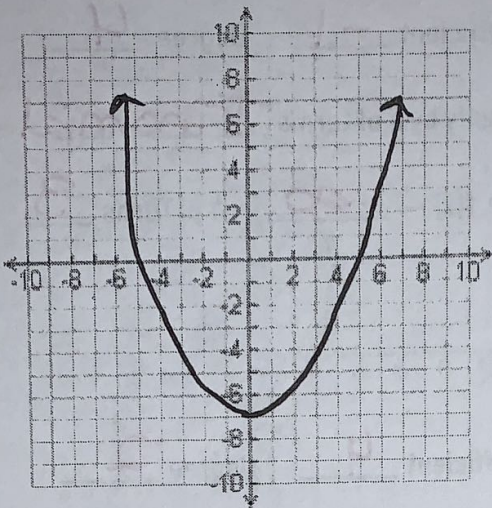
4.

Relative Maximum 0 or $(3, 0)$ Relative Minimum -5 or $(0, -5)$ Absolute Maximum noneAbsolute Minimum noneInterval(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 $(0, -5)$
twice

End Behavior:

 $x \rightarrow -\infty, f(x) \rightarrow +\infty$ $x \rightarrow \infty, f(x) \rightarrow -\infty$ # of Extrema 2

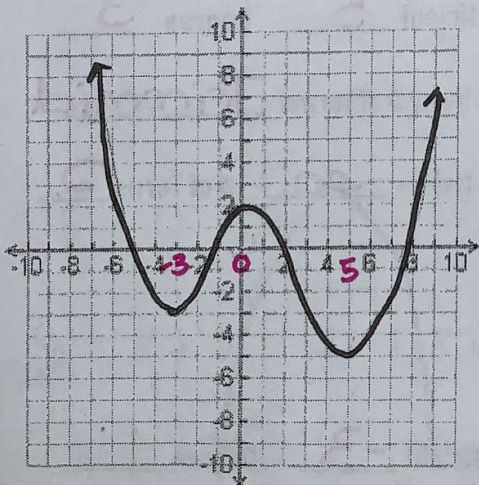
5.

Relative Maximum noneRelative Minimum -7 or (0, -7)Absolute Maximum noneAbsolute Minimum -7 or (0, -7)Interval(s) of Increasing (0, ∞)Interval(s) of Decreasing (-∞, 0)Domain (-∞, ∞) Range [-7, ∞)Zeros (-5, 0) (5, 0) Y-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 2 or (0, 2)Relative Minimum -3 or (-3, -3) or (5, -5)Absolute Maximum noneAbsolute Minimum -5 or (5, -5)Interval(s) of Increasing (-3, 0) ∪ (5, ∞)Interval(s) of Decreasing (-∞, -3) ∪ (0, 5)Domain (-∞, ∞) Range [-5, ∞)Zeros (-5, 0) (-1, 0) (2, 0) (8, 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
odd $\rightarrow -$

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
even +

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

Standard form $f(x) = 5x^3 + 5x$ Leading Coefficient 5 Degree 3

of Zeros 3 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 2
odd +

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

Standard form $f(x) = -3x$ 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
odd -