

## 5.2 / 5.8 Sketch Polynomial Functions in Factored Form Notes

Advanced Algebra w/ Trig, Glawe

Name: \_\_\_\_\_

Date: \_\_\_\_\_ P: \_\_\_\_\_

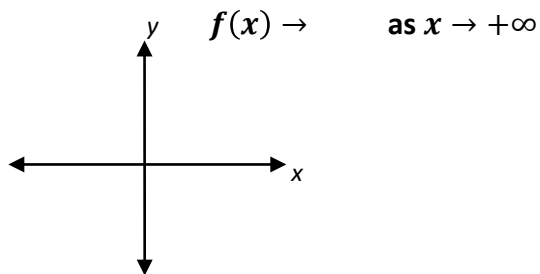
end behavior: the behavior of the graph as  $x$  approaches positive infinity or negative infinity

multiplicity: the number of times that a zero's associated factor appears in the polynomial

### End Behavior of Polynomial Functions

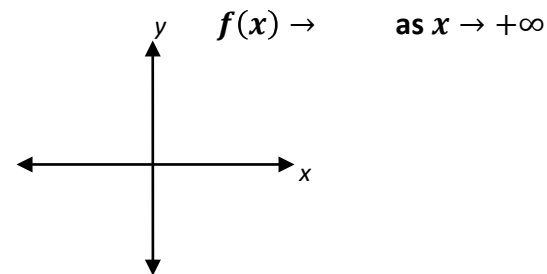
**Degree:**

**Leading coefficient:**



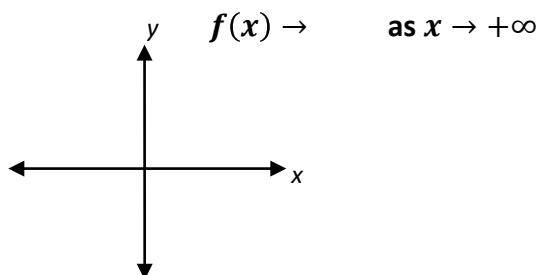
**Degree:**

**Leading coefficient:**



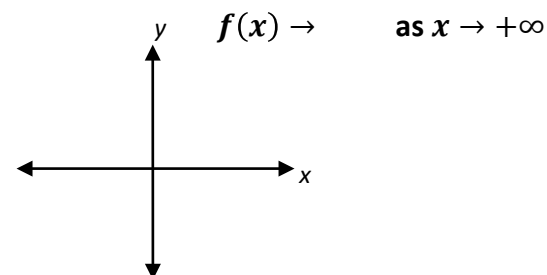
**Degree:**

**Leading coefficient:**



**Degree:**

**Leading coefficient:**



**Ex 1:** Sketch the graph of the polynomial:

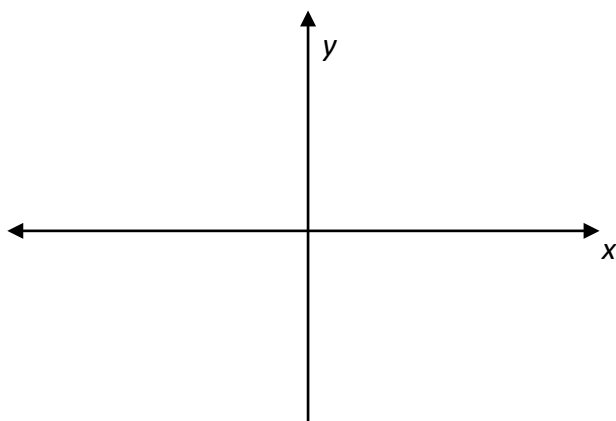
$$g(x) = (x + 4)(x + 1)(x - 2)$$

·Degree: \_\_\_\_\_ ·Leading coefficient: \_\_\_\_\_

·End behavior:  $f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow -\infty$   
and  $f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow +\infty$

·x-int(s): \_\_\_\_\_ y-int: \_\_\_\_\_

·multiplicity: \_\_\_\_\_



**Ex 2:** Sketch the graph of the polynomial:

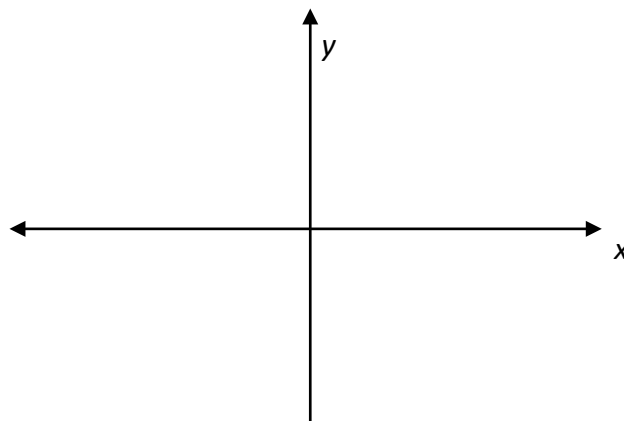
$$h(x) = -(x + 3)^2(x - 1)$$

·Degree: \_\_\_\_\_ ·Leading coefficient: \_\_\_\_\_

·End behavior:  $f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow -\infty$   
and  $f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow +\infty$

·x-int(s): \_\_\_\_\_ y-int: \_\_\_\_\_

·multiplicity: \_\_\_\_\_



**Ex 3:** Sketch the graph of the polynomial:

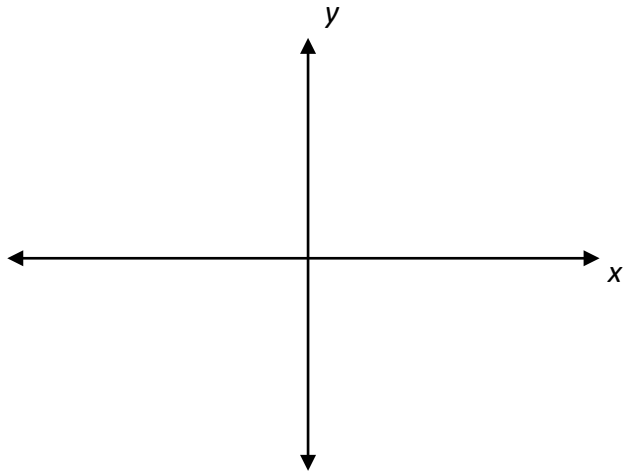
$$g(x) = 3x(x + 1)(x + 3)(x - 2)$$

·Degree: \_\_\_\_\_ ·Leading coefficient: \_\_\_\_\_

·End behavior:  $f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow -\infty$   
and  $f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow +\infty$

·x-int(s): \_\_\_\_\_ y-int: \_\_\_\_\_

·multiplicity: \_\_\_\_\_



**Ex 4:** Sketch the graph of the polynomial:

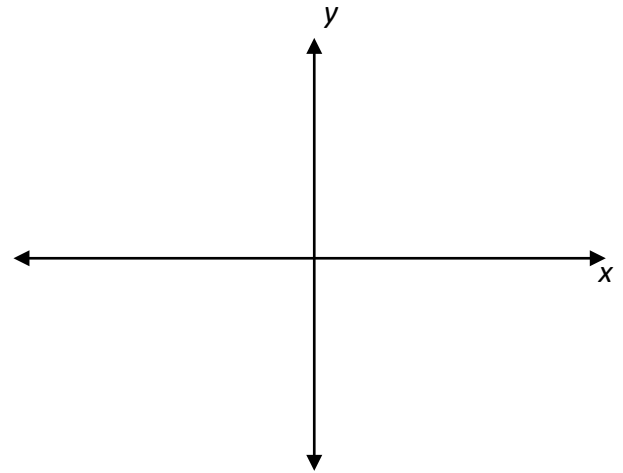
$$f(x) = -(x + 3)^2(x - 2)^2$$

·Degree: \_\_\_\_\_ ·Leading coefficient: \_\_\_\_\_

·End behavior:  $f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow -\infty$   
and  $f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow +\infty$

·x-int(s): \_\_\_\_\_ y-int: \_\_\_\_\_

·multiplicity: \_\_\_\_\_



**Ex 5:** Sketch the graph of the polynomial:

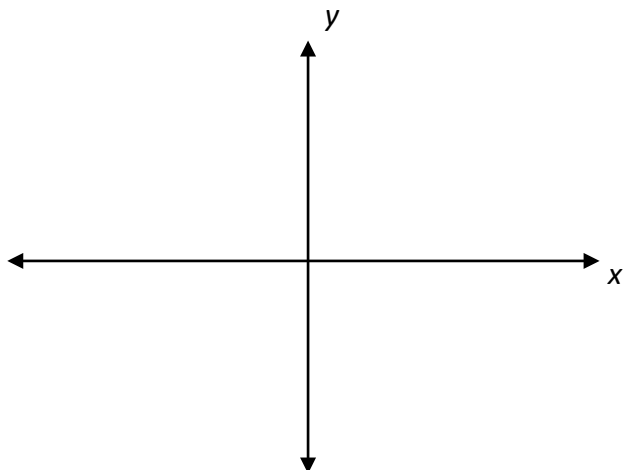
$$f(x) = 2x(x - 4)^2$$

·Degree: \_\_\_\_\_ ·Leading coefficient: \_\_\_\_\_

·End behavior:  $f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow -\infty$   
and  $f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow +\infty$

·x-int(s): \_\_\_\_\_ y-int: \_\_\_\_\_

·multiplicity: \_\_\_\_\_



**Ex 6:** Sketch the graph of the polynomial:

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

·Degree: \_\_\_\_\_ ·Leading coefficient: \_\_\_\_\_

·End behavior:  $f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow -\infty$   
and  $f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow +\infty$

·x-int(s): \_\_\_\_\_ y-int: \_\_\_\_\_

·multiplicity: \_\_\_\_\_

