

# 3-3 End Behavior

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

Time Start: \_\_\_\_\_ Finish: \_\_\_\_\_ Total Time = \_\_\_\_\_

Use the graphs to determine the left and right end behavior. Remember that we say something like “As  $x \rightarrow -\infty, f(x) \rightarrow \infty$ .” Just pick from this numbering to answer the questions.

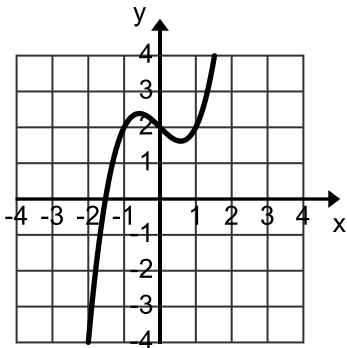
1 = As  $x \rightarrow -\infty, f(x) \rightarrow -\infty$

2 = As  $x \rightarrow -\infty, f(x) \rightarrow \infty$

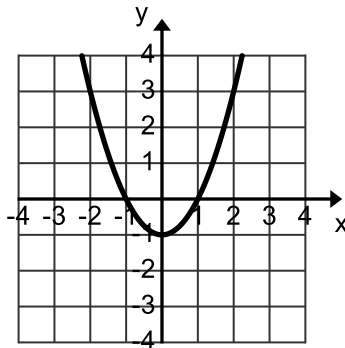
3 = As  $x \rightarrow \infty, f(x) \rightarrow -\infty$

4 = As  $x \rightarrow \infty, f(x) \rightarrow \infty$

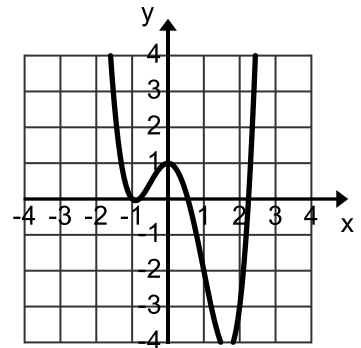
Graph 1



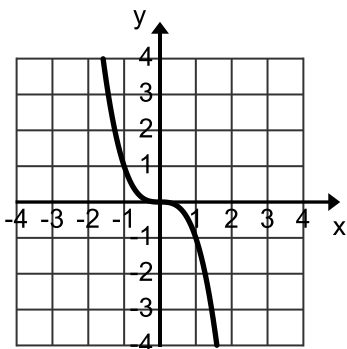
Graph 2



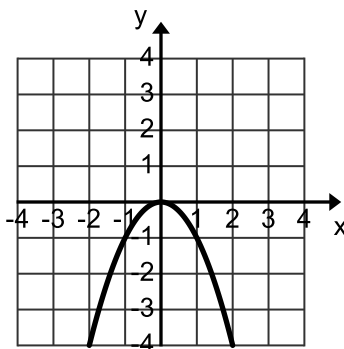
Graph 3



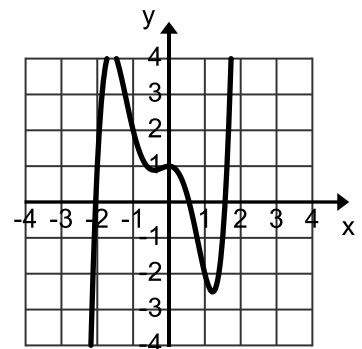
Graph 4



Graph 5



Graph 6



Graph 1: Left End Behavior = \_\_\_\_\_ Right End Behavior = \_\_\_\_\_

Graph 2: Left End Behavior = \_\_\_\_\_ Right End Behavior = \_\_\_\_\_

Graph 3: Left End Behavior = \_\_\_\_\_ Right End Behavior = \_\_\_\_\_

Graph 4: Left End Behavior = \_\_\_\_\_ Right End Behavior = \_\_\_\_\_

Graph 5: Left End Behavior = \_\_\_\_\_ Right End Behavior = \_\_\_\_\_

Graph 6: Left End Behavior = \_\_\_\_\_ Right End Behavior = \_\_\_\_\_

For 7-12, use DESMOS and graph the functions and determine the left end behavior and the right end behavior. Again, use this numbering to answer the problems.

$$1 = x \rightarrow -\infty, f(x) \rightarrow -\infty$$

$$2 = x \rightarrow -\infty, f(x) \rightarrow \infty$$

$$3 = x \rightarrow \infty, f(x) \rightarrow -\infty$$

$$4 = x \rightarrow \infty, f(x) \rightarrow \infty$$

7.  $f(x) = -5x^4 - 7x + 1$       Left End Behavior = \_\_\_\_\_      Right End Behavior = \_\_\_\_\_

8.  $f(x) = 5x^2 - 6$       Left End Behavior = \_\_\_\_\_      Right End Behavior = \_\_\_\_\_

9.  $f(x) = -x^3 + 2x - 1$       Left End Behavior = \_\_\_\_\_      Right End Behavior = \_\_\_\_\_

10.  $f(x) = x^9$       Left End Behavior = \_\_\_\_\_      Right End Behavior = \_\_\_\_\_

11.  $f(x) = x^{24} + 2$       Left End Behavior = \_\_\_\_\_      Right End Behavior = \_\_\_\_\_

12.  $f(x) = -4x^{11} + 3$       Left End Behavior = \_\_\_\_\_      Right End Behavior = \_\_\_\_\_