BM 3: I CAN DETERMINE END BEHAVIOR OF A FUNCTION FROM ITS GRAPH

Khan Academy video: End Behavior of Polynomials (link posted at usamath.weebly.com)

Consider the quadratic function $y = ax^2 + bx + c$.

When $a > 0$, the parabola opens _____ and the graph looks like

When $a < 0$, the parabola opens _____ and the graph looks like

Consider the cubic function $y = ax^3 + bx^2 + cx + d$.

When $a > 0$ and x is really negative, the whole thing is _____ . But as x gets more and more positive, it gets more _____ . So when $a > 0$, the graph looks like:

Consider the cubic function $y = ax^3 + bx^2 + cx + d$.

When $a < 0$ and x is really negative, you multiply that by a negative and you get a _____ value, the whole thing is _____ . So when $a < 0$, the graph looks like:

End Behavior describes what happens at

_____

of x.

Consider the 4th degree polynomial (quartic) $y = ax^4 + bx^3 + cx^2 + dx + f$.

When $a > 0$, the graph looks like

When $a < 0$, the graph looks like

Consider the 5th degree polynomial (quintic) $y = ax^5 + bx^4 + \ldots$

When $a > 0$, the graph looks like

When $a < 0$, the graph looks like

Khan Academy notes: End Behavior of Polynomials (link posted at usamath.weebly.com)

The END BEHAVIOR of a function f describes:

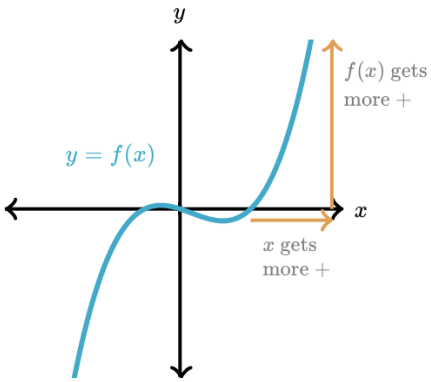
Consider the graph to the right.

As x gets larger and larger, $f(x)$ gets larger and larger as well.

- Mathematically, we write as $x \rightarrow$, $f(x) \rightarrow$
- Verbally, we say _____

_____

_____



On the other end, as we move to the left along the x-axis, the graph of f goes down. This means as x gets more negative, $f(x)$ also gets more negative.

- Mathematically, we write as $x \rightarrow$, $f(x) \rightarrow$
- Verbally, we say _____

_____

_____

Here is the graph of $g(x)$. Use symbols and words to describe the end behavior.