

Function notation uses the symbol $f(x)$. This symbol is interchangeable for y and is read as "f of x."

$f(x) = y$

$y =$ (graphing notation)

Use the given value of x to evaluate the function $f(x) = 3x^2 - 2$.

Write your answers as an ordered pair.

<p>1) $f(3) = 25$</p> <p>$3x^2 - 2$</p> <p>$f(3) = 3(3)^2 - 2$</p> <p>$= 3(9) - 2$</p> <p>$= 27 - 2 = 25$</p> <p>$3 \rightarrow$ domain value</p> <p>$? \rightarrow$ range value</p>	<p>2) $f(-2)$</p> <p>$f(-2) = 3(-2)^2 - 2$</p> <p>$= 3(4) - 2$</p> <p>$= 12 - 2$</p> <p>$= 10$</p> <p>$(-2, 10)$</p>	<p>3) $f(1)$</p> <p>$f(1) = 3(1)^2 - 2$</p> <p>$= 3 - 2$</p> <p>$= 1$</p>	<p>4) $f(-1)$</p> <p>$f(-1) = 3(-1)^2 - 2$</p> <p>$= 3 - 2$</p> <p>$= 1$</p>
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(3, 25)

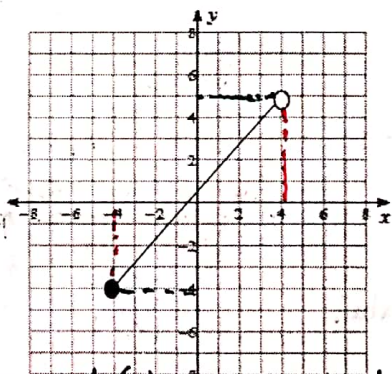
Domain refers to the x values, or input, of a function and range refers to the y values, or output. We have been able to list these numbers out (as completed above) but at times, there are far too many to list. Consider a line? Could you list all of the points included?

We use interval notation or inequalities when this situation arises.

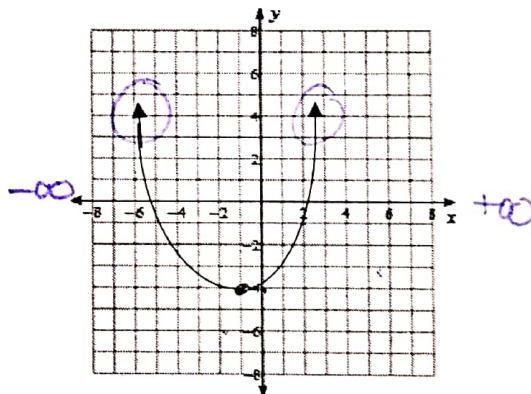
$-\infty \rightarrow$
 ∞

Use () when the value is NOT included. Use [] when the value IS included.

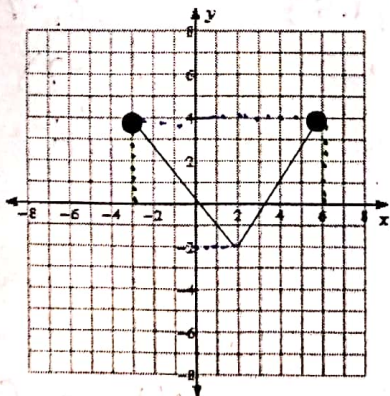
Find the domain and range of the following functions. Use interval notation for your answers.



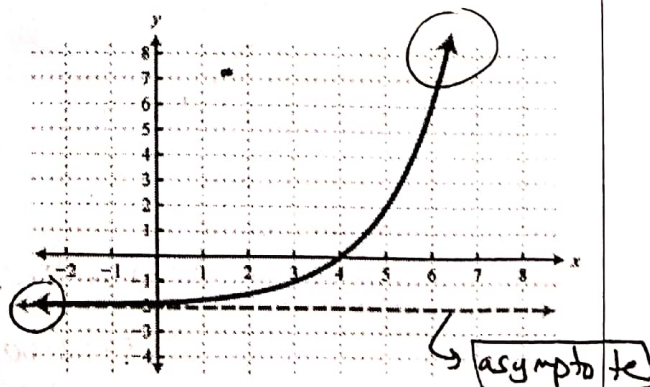
horizontal (x) vertical (y)
Domain: $[-4, 4)$ Range: $[-4, 5)$



Domain: $(-\infty, \infty)$ Range: $[-4, \infty)$



Domain: $[-3, 6]$ Range: $[-4, 4]$



Domain: $(-\infty, \infty)$ Range: $(-2, \infty)$

line up with x-axis U = and
State the intervals of increase/decrease of the following graphs.

Increase: $(-\infty, -1] \cup [3, \infty)$
 Decrease: $[-1, 3]$

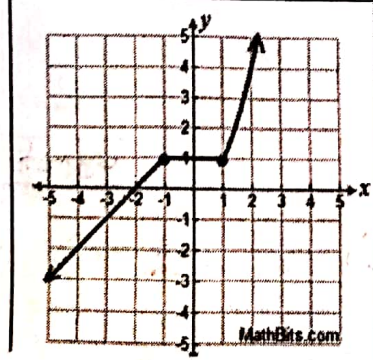
Increase: $[1, \infty)$
 Decrease: $(-\infty, 1]$

Increase: $(-\infty, \infty)$
 Decrease: ~~X~~ N/A

The maximum value of a graph refers to the highest y value of the point. The minimum value of a graph refers to the lowest y value of the point. When you are asked where the min or max occur, use the x value.

Use the graph below to answer the following questions.

Function or relation? Function
 Domain: $(-4, 0)$ Range: $[-7, 0)$
 Intervals of increase: $(-4, -2] \cup [2, 2]$ $[2, 0)$
 Intervals of decrease: $[-2, 2]$
 horizontal
 Intervals where constant: N/A
 Zeros (x-intercepts) $x = -3, x = -1, x = 3.5$
 Y-intercept: $(0, -3)$
 Max: $(-2, 1.5)$ Min: $(2, -7)$ → locals
 Find the absolute minimum: $(2, -7)$
 Find the absolute maximum: N/A } N/A



- Analyze the given function:
- 1.) Function
 - 2.) D: $(-\infty, \infty)$ R: $(-\infty, \infty)$
 - 3.) I: $(-\infty, -1] \cup [1, \infty)$ D: N/A C: $[-1, 1]$
 - 4.) zeros: $x = -2$ 5.) y-int: $(0, 1)$ 6.) Max: N/A
 - 7.) Min: N/A 8.) No absolute Max/Min