

Warm-up:

11

A function is shown.

$h(t) = -t^2 + 10t - 16$

For which interval of t -values is the function both positive and increasing?

- (A) $t < 5$
- (B) $t > 8$
- (C) $2 < t < 5$
- (D) $5 < t < 8$

$-\frac{b}{2a} = x \quad (5, 9) \quad \frac{-10}{-2} = 5$

$-(5)^2 + 10(5) - 16$
 $-25 + 50 - 16$

$-t^2 + 10t - 16 \geq 0$



22

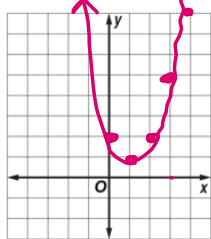
Julian graphs the function $f(x) = 2^x + 5$. He then moves the graph down 8 units to create function $g(x)$.

Create an equation that represents $g(x)$.

$g(x) =$

$2^x + 5 - 8$
 $2^x - 3$

$y = x^2 - 2x + 2$



x	y
0	2
1	$1^2 - 2(1) + 2$ 1
4	$(4)^2 - 2(4) + 2$ $16 - 8 + 2$ 10
3	$9 - 6 + 2$ 5

Domain:

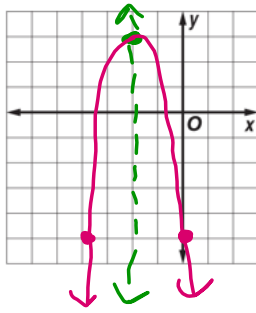
$(-\infty, \infty)$

Range:

$\{y \mid y \geq 1\}$
 $[1, \infty)$

$y \geq 1$

$f(x) = -2x^2 - 8x - 5$



Domain:

\mathbb{R}

Range:

$(-\infty, 3] \{y | y \leq 3\}$

$\frac{-b}{2a}$

$a = -2$

$b = -8$

$c = -5$

$\frac{-(-8)}{2(-2)} = \frac{8}{-4} = -2$

$-2(-2)^2 - 8(-2) - 5$
 $-2(4) + 16 - 5$

Characteristic:	$y = x^2 + 4x + 6$
Vertex	$(-2, 2)$
Equation of Axis of Symmetry	$\frac{-4}{2(1)} = -2$ $x = -2$
y-intercept of the function	$(0, 6)$
Determine whether the function has a <i>maximum</i> or a <i>minimum</i> value.	minimum
State the maximum or minimum value.	2 $y = 2$
What are the domain and range of the function?	$D = (-\infty, \infty)$ $R = [2, \infty)$

$(-2)^2 + 4(-2) + 6$

$a = 1$

$b = 4$

$c = 6$

$\frac{-b}{2a} =$ axis of symmetry

2

Describe how the graph of each function is related to the graph of $f(x) = x^2$.

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

Handwritten notes for $g(x) = (x + 1)^2 - 4$:

- Reflect
- Stretch/compress
- up/down
- right/left

Down 4
left 1

- reflect over x-axis
- stretches by a factor of 2
- down 1

Match each equation to its graph.

B $y = 2x^2 - 2$

D $y = \frac{1}{2}x^2 - 2$

C $y = -\frac{1}{2}x^2 + 2$

A $y = -2x^2 + 2$

