

GSE Algebra I

Name _____

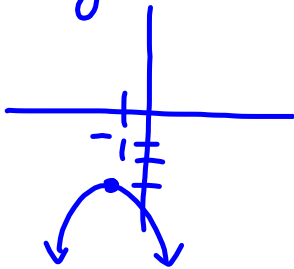
Comparing Quadratics Task

When we are talking about quadratics, they can be presented in many different forms. They can be equations, tables, graphs, or scenarios that are quadratic in nature. Depending on the form, the characteristics of the quadratics may present themselves differently.

For the following quadratics, fill in the table for their characteristics. For the sake of this assignment, assume the table represents part of a continuous, infinite function.

1. $f(x) = -2(x + 1)^2 - 3$

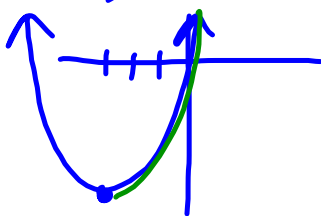
Range



Vertex: $(-1, -3)$	Axis of Symmetry: $x = -1$
Extrema: max	Max/Min Value: $y = -3$
Domain: \mathbb{R}	Range: $y \leq -3$ or $-\infty < y \leq -3$
Interval of Increase: $-\infty < x < -1$	
Interval of Decrease: $-1 < x < \infty$	
Y-Intercept: $(0, -5)$	$\frac{-5 - (-3)}{4 - 2} = \frac{-2}{2} = -1$
Rate of change on the interval $2 \leq x \leq 4$: $(2, -21)$ $(4, -53)$	

2. $g(x) = 3x^2 + 18x - 4$

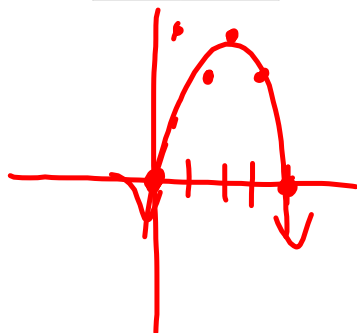
$\frac{-18}{2(3)} = \frac{-18}{6} = -3$



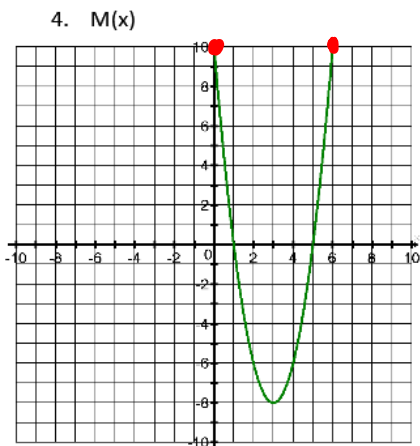
Y-Intercept: $(0, -4)$	Axis of Symmetry: $x = -3$
Vertex: $(-3, -31)$	Max/Min Value: $y = -31$
Extrema: min	Range: $y \geq -31$ or $-31 \leq y < \infty$
Domain: \mathbb{R}	
Interval of Increase: $-3 < x < \infty$	} never equal
Interval of Decrease: $-\infty < x < -3$	
Rate of change on the interval $2 \leq x \leq 4$: $(2, 44)$ $(4, 116)$ $\frac{116 - 44}{4 - 2} = \frac{72}{2} = 36$	

3.

x	H(x)
0	0
1	6
2	8
3	6
4	0



Vertex: $(2, 8)$	Axis of Symmetry: $x = 2$
Extrema: max	Max/Min Value: $y = 8$
Domain: \mathbb{R}	Range: $y \leq 8$
Interval of Increase: $-\infty < x < 2$	
Interval of Decrease: $2 < x < \infty$	
Y-Intercept: $(0, 0)$	Zeros: $x = 0, 4$
Rate of change on the interval $2 \leq x \leq 4$: $(2, 8)$ $(4, 0)$ $\frac{0 - 8}{4 - 2} = \frac{-8}{2} = -4$	



Vertex: $(3, -8)$ Axis of Symmetry: $x = 3$
 Extrema: min Max/Min Value: $y = -8$
 Domain: \mathbb{R} Range: $y \geq -8$
 Interval of Increase: $3 < x < \infty$
 Interval of Decrease: $-\infty < x < 3$
 Y-Intercept: $(0, 10)$ Zeros: $x = 1, 5$
 Rate of change on the interval $2 \leq x \leq 4$: 0

$(2, -6)$ $(4, -6)$

$$\frac{-6 - (-6)}{4 - 2} = \frac{0}{2}$$

5. Which of your 4 functions had the **greatest rate of increase** for $2 \leq x \leq 4$?

#2

6. Which of your 4 functions had the **smallest value** at the vertex?

-31 #2

7. Which of your 4 functions had the **greatest y-intercept**?

#4

8. Which of your 4 functions had the **smallest rate of increase** for $2 \leq x \leq 4$?

#1