

CCGPS Analytics Geometry Graphing Quadratics Practice February 5, 2015 (Thurs)

Standard form: $y = ax^2 + bx + c$

Vertex: $x = \frac{-b}{2a}$ A.O.S: $x = \frac{-b}{2a}$

*To find Avg. R.O.C., find slope between endpoints

Slope = $\frac{y_2 - y_1}{x_2 - x_1}$

Intercept form: $y = a(x - p)(x - q)$

x-intercepts: $(p, 0)$ and $(q, 0)$ Vertex: $x = \frac{p+q}{2}$ A.O.S: $x = \frac{p+q}{2}$

Vertex Form: $y = a(x - h)^2 + k$ vertex: (h, k) A.O.S: $x = h$

1. Graph $y = x^2 - 6x + 8$ Form: _____ Opens: _____

Vertex: _____ a = _____ Max / Min (Circle one)

AOS: _____ x - intercept(s): _____ y - intercept: _____

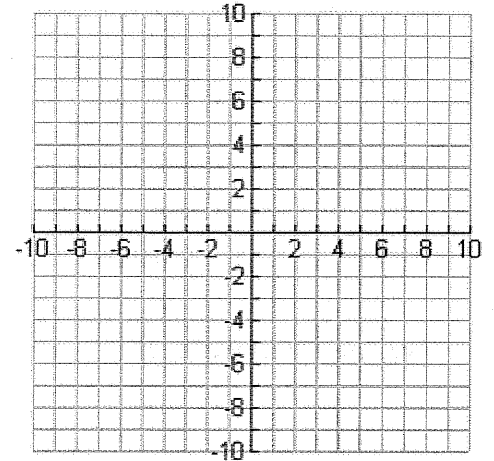
Domain: _____ Range: _____

Avg. Rate of Change [4, 6]: _____

End Behavior:

As $x \rightarrow \infty, f(x) \rightarrow$ _____ Increasing: _____ Positive: _____

As $x \rightarrow -\infty, f(x) \rightarrow$ _____ Decreasing: _____ Negative: _____



2. Graph $y = 3(x + 1)(x - 3)$ Form: _____ Opens: _____

Vertex: _____ a = _____ Max / Min (Circle one)

AOS: _____ x - intercept(s): _____ y - intercept: _____

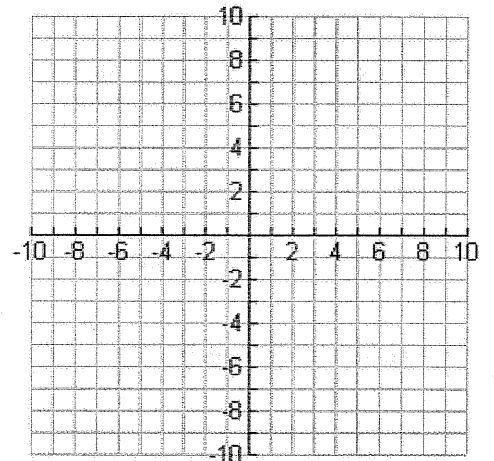
Domain: _____ Range: _____

Avg. Rate of Change [-1, 0]: _____

End Behavior:

As $x \rightarrow \infty, f(x) \rightarrow$ _____ Increasing: _____ Positive: _____

As $x \rightarrow -\infty, f(x) \rightarrow$ _____ Decreasing: _____ Negative: _____



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Intercept form: $y = a(x - p)(x - q)$

x-intercepts: $(p, 0)$ and $(q, 0)$ Vertex: $x = \frac{p+q}{2}$ A.O.S: $x = \frac{p+q}{2}$

Vertex Form: $y = a(x - h)^2 + k$ vertex: (h, k) A.O.S: $x = h$

3. Graph $y = -(x - 2)^2 + 9$ Form: _____ Opens: _____

Vertex: _____ a = _____ Max / Min (Circle one)

AOS: _____ x - intercept(s): _____ y - intercept: _____

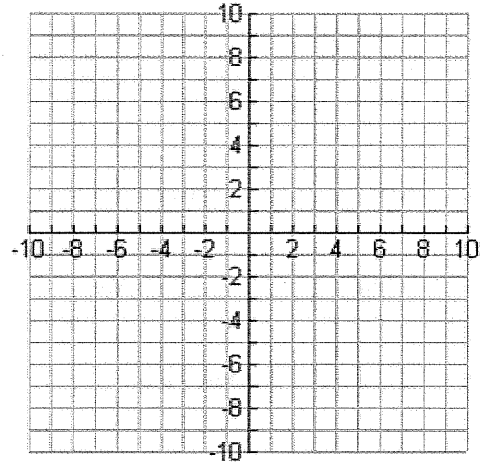
Domain: _____ Range: _____

Avg. Rate of Change $[0, 2]$: _____

End Behavior:

As $x \rightarrow \infty, f(x) \rightarrow$ _____ Increasing: _____ Positive: _____

As $x \rightarrow -\infty, f(x) \rightarrow$ _____ Decreasing: _____ Negative: _____



4. Graph $y = -x^2 - 6x - 5$ Form: _____ Opens: _____

Vertex: _____ a = _____ Max / Min (Circle one)

AOS: _____ x - intercept(s): _____ y - intercept: _____

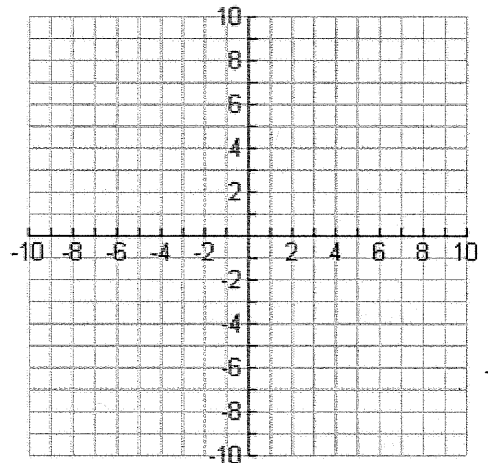
Domain: _____ Range: _____

Avg. Rate of Change $[-6, -2]$: _____

End Behavior:

As $x \rightarrow \infty, f(x) \rightarrow$ _____ Increasing: _____ Positive: _____

As $x \rightarrow -\infty, f(x) \rightarrow$ _____ Decreasing: _____ Negative: _____



Standard form: $y = ax^2 + bx + c$

Vertex: $x = \frac{-b}{2a}$ A.O.S: $x = \frac{-b}{2a}$

To find Avg. R.O.C., find slope between endpoints

Slope = $\frac{y_2 - y_1}{x_2 - x_1}$

$\frac{6}{2(1)} = 3$

Intercept form: $y = a(x - p)(x - q)$

x-intercepts: $(p, 0)$ and $(q, 0)$ Vertex: $x = \frac{p+q}{2}$ A.O.S: $x = \frac{p+q}{2}$

Vertex Form: $y = a(x - h)^2 + k$ vertex: (h, k) A.O.S: $x = h$

1. Graph $y = x^2 - 6x + 8$ Form: standard Opens: up

Vertex: (3, -1) a = 1 Max / Min (Circle one)

AOS: x = x-intercept(s): (2, 0) (4, 0) y-intercept: (0, 8)

Domain: $(-\infty, \infty)$ Range: $[-1, \infty)$

Avg. Rate of Change [4, 6]: 4

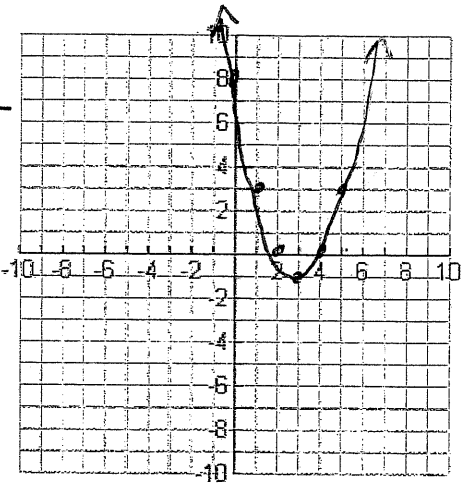
$\frac{(4, 0) - (6, 8)}{6 - 4} = \frac{8 - 0}{6 - 4} = \frac{8}{2} = 4$

End Behavior:

As $x \rightarrow \infty, f(x) \rightarrow +\infty$ Increasing: $(3, \infty)$ Positive: $(-\infty, 2) \cup (4, \infty)$

As $x \rightarrow -\infty, f(x) \rightarrow +\infty$ Decreasing: $(-\infty, 3)$ Negative: $(2, 4)$

x	y
1	3
2	0
3	-1
4	0
5	3
6	8



2. Graph $y = 3(x + 1)(x - 3)$ Form: intercept Opens: up

Vertex: (1, -12) a = 3 Max / Min (Circle one)

AOS: x = 1 x-intercept(s): (-1, 0) (3, 0) y-intercept: (0, -9)

Domain: $(-\infty, \infty)$ Range: $[-12, \infty)$

Avg. Rate of Change $[-1, 0]$ -9

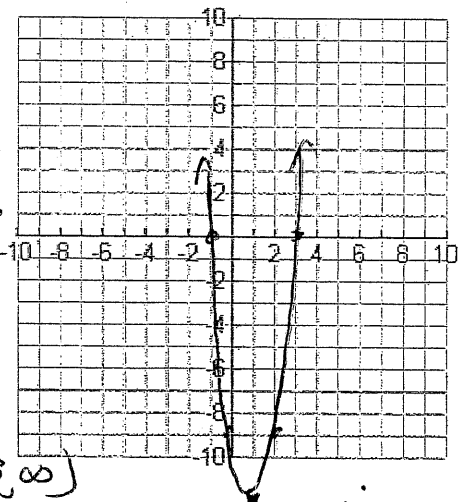
$\frac{(1, 0) - (0, -9)}{0 - (-1)} = \frac{-9 - 0}{0 - (-1)} = \frac{-9}{1} = -9$

End Behavior:

As $x \rightarrow \infty, f(x) \rightarrow +\infty$ Increasing: $(1, \infty)$ Positive: $(-\infty, -1) \cup (3, \infty)$

As $x \rightarrow -\infty, f(x) \rightarrow +\infty$ Decreasing: $(-\infty, 1)$ Negative: $(-1, 3)$

x	y
-1	0
0	-9
1	-12
2	-9
3	0



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Vertex Form: $y = a(x - h)^2 + k$ vertex: (h, k) A.O.S: $x = h$

3. Graph $y = -(x - 2)^2 + 9$ Form: vertex Opens: down

Vertex: (2, 9) $a = -1$ (Max) Min (Circle one)

AOS: $x = 2$ x-intercept(s): (-1, 0)(5, 0) y-intercept: (0, 5)

Domain: $(-\infty, \infty)$ Range: $(-\infty, 9]$

Avg. Rate of Change $[0, 2]$ 2

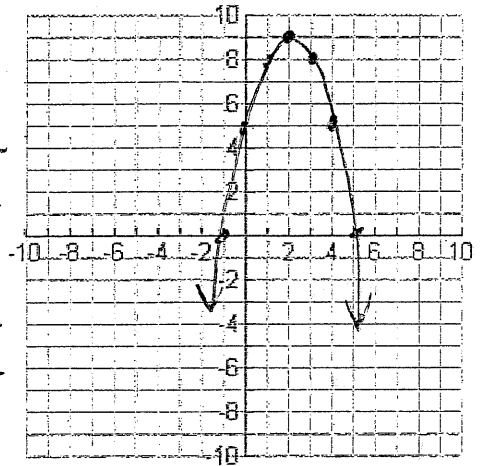
$$\begin{matrix} (0, 5) \\ (2, 9) \end{matrix} \quad m = \frac{9-5}{2-0} = \frac{4}{2} = 2$$

End Behavior:

As $x \rightarrow \infty, f(x) \rightarrow -\infty$ Increasing: $(-\infty, 2)$ Positive: $(-1, 5)$

As $x \rightarrow -\infty, f(x) \rightarrow -\infty$ Decreasing: $(2, \infty)$ Negative: $(-\infty, -1) \cup (5, \infty)$

x	y
-1	0
0	5
1	8
2	9
3	8
4	5



$$\frac{-b}{2a} = \frac{6}{2(-1)} = -3$$

4. Graph $y = -x^2 - 6x - 5$ Form: standard Opens: down

Vertex: (-3, 4) $a = -1$ (Max) Min (Circle one)

AOS: $x = -3$ x-intercept(s): (-5, 0)(-1, 0) y-intercept: (0, -5)

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

Avg. Rate of Change $[-6, -2]$ 2

$$\begin{matrix} (-6, -5) \\ (-2, 3) \end{matrix} \quad m = \frac{-5-3}{-6+2} = \frac{-8}{-4} = 2$$

End Behavior:

As $x \rightarrow \infty, f(x) \rightarrow -\infty$ Increasing: $(-\infty, -3)$ Positive: $(-5, -1)$

As $x \rightarrow -\infty, f(x) \rightarrow -\infty$ Decreasing: $(-3, \infty)$ Negative: $(-\infty, -5) \cup (-1, \infty)$

x	y
-5	0
-4	3
-3	4
-2	3
-1	0
0	-5

