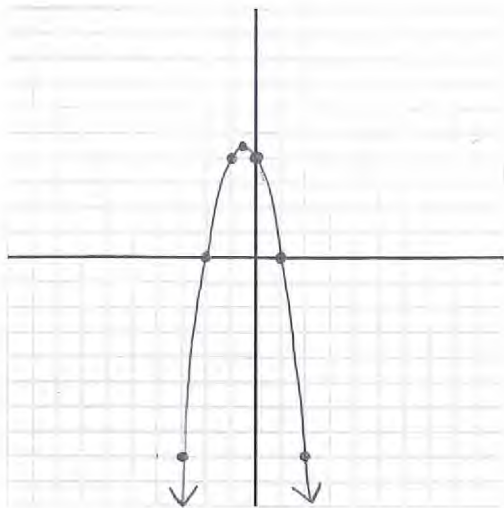


Unit 5 Practice #1

#11

Identify the characteristics by looking at the given graph.

①

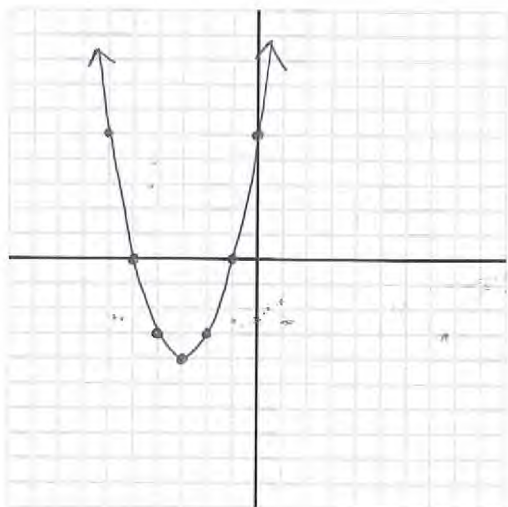


vertex: _____
 AOS: _____
 extrema: _____
 y-int: _____
 x-int: _____
 zeros: _____
 int of inc: _____
 int of dec: _____

ROC, $-2 \leq x \leq -1$:

 End Behavior:
 as $x \rightarrow -\infty$,
 $y \rightarrow$ _____
 as $x \rightarrow \infty$,
 $y \rightarrow$ _____

②

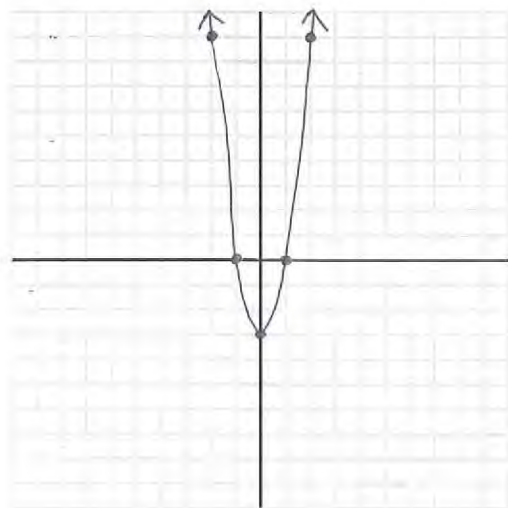


vertex: _____
 AOS: _____
 extrema: _____
 y-int: _____
 x-int: _____
 zeros: _____
 int of inc: _____
 int of dec: _____

ROC, $-5 \leq x \leq -3$:

 End Behavior:
 as $x \rightarrow -\infty$,
 $y \rightarrow$ _____
 as $x \rightarrow \infty$,
 $y \rightarrow$ _____

③



vertex: _____
 AOS: _____
 extrema: _____
 y-int: _____
 x-int: _____
 zeros: _____
 int of inc: _____
 int of dec: _____

ROC, $1 \leq x \leq 2$:

 End Behavior:
 as $x \rightarrow -\infty$,
 $y \rightarrow$ _____
 as $x \rightarrow \infty$,
 $y \rightarrow$ _____

Identify the characteristics by looking at the equation in standard form.

④ $y = -2x^2 - 2x + 4$

vertex: _____

AOS: _____

extrema: _____

y-int: _____

⑤ $y = x^2 + 6x + 5$

vertex: _____

AOS: _____

extrema: _____

y-int: _____

⑥ $y = 3x^2 - 3$

vertex: _____

AOS: _____

extrema: _____

y-int: _____

Describe how the parent function $y = x^2$ was transformed to create the given function.

⑦ $y = -\left(\frac{1}{3}x + 6\right)^2 - 4$

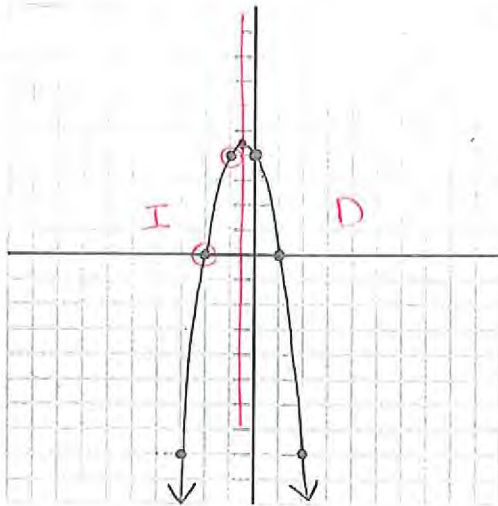
⑧ $y = 5(-x - 2)^2 + 3$

Unit 5 Practice #1

Key #11

Identify the characteristics by looking at the given graph.

①



vertex: $(-0.5, 4.5)$

AoS: $x = -0.5$

extrema: max at 4.5

y-int: $(0, 4)$

x-int: $(-2, 0) + (1, 0)$

zeros: $-2 + 1$

int of inc: $x < -0.5$

int of dec: $x \geq -0.5$

ROC, $-2 \leq x \leq 1$:

$$\frac{4}{1} = 4$$

End Behavior:

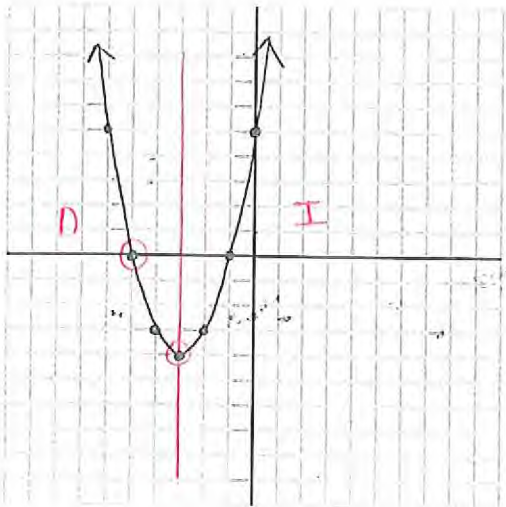
as $x \rightarrow -\infty$,

$y \rightarrow -\infty$

as $x \rightarrow \infty$,

$y \rightarrow -\infty$

②



vertex: $(-3, -4)$

AoS: $x = -3$

extrema: min at -4

y-int: $(0, 5)$

x-int: $(-1, 0) + (-5, 0)$

zeros: $-1 + -5$

int of inc: $x \geq -3$

int of dec: $x < -3$

ROC, $-5 \leq x \leq -1$:

$$\frac{4}{-2} = -2$$

End Behavior:

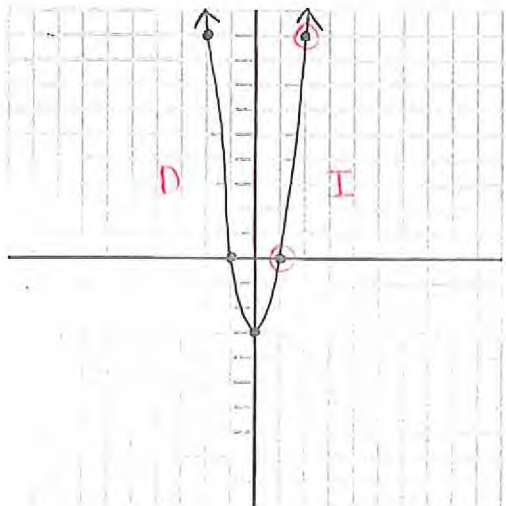
as $x \rightarrow -\infty$,

$y \rightarrow \infty$

as $x \rightarrow \infty$,

$y \rightarrow \infty$

③



vertex: $(0, -3)$

AoS: $x = 0$

extrema: min at -3

y-int: $(0, -3)$

x-int: $(1, 0) + (-1, 0)$

zeros: $-1 + 1$

int of inc: $x \geq 0$

int of dec: $x < 0$

ROC, $-1 \leq x \leq 1$:

$$\frac{9}{1} = 9$$

End Behavior:

as $x \rightarrow -\infty$,

$y \rightarrow \infty$

as $x \rightarrow \infty$,

$y \rightarrow \infty$

Identify the characteristics by looking at the equation in standard form.

④ $y = -2x^2 - 2x + 4$ $\begin{matrix} a = -2 \\ b = -2 \\ c = 4 \end{matrix}$

↙ vertex: $(-0.5, 4.5)$

AoS: $x = -0.5$

extrema: max at 4.5

y-int: $(0, 4)$

$$x = \frac{-b}{2a} = \frac{-(-2)}{2(-2)} = \frac{2}{-4} = -\frac{1}{2} = -0.5$$

$$\begin{aligned} y &= -2(-0.5)^2 - 2(-0.5) + 4 \\ &= -0.5 + 1 + 4 \\ &= 0.5 + 4 \\ &= 4.5 \end{aligned}$$

$$\begin{aligned} y &= -2(0)^2 - 2(0) + 4 \\ &= 0 + 0 + 4 \\ &= 4 \end{aligned}$$

⑤ $y = x^2 + 6x + 5$ $\begin{matrix} a = 1 \\ b = 6 \\ c = 5 \end{matrix}$

↖ vertex: $(-3, -4)$

AoS: $x = -3$

extrema: min at -4

y-int: $(0, 5)$

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

$$\begin{aligned} y &= (-3)^2 + 6(-3) + 5 \\ &= 9 - 18 + 5 \\ &= -9 + 5 \\ &= -4 \end{aligned}$$

$$\begin{aligned} y &= 0^2 + 6(0) + 5 \\ &= 0 + 0 + 5 \\ &= 5 \end{aligned}$$

⑥ $y = 3x^2 - 3$ $\begin{matrix} a = 3 \\ b = 0 \\ c = -3 \end{matrix}$

↖ vertex: $(0, -3)$

AoS: $x = 0$

extrema: min at -3

y-int: $(0, -3)$

$$x = \frac{-b}{2a} = \frac{-(0)}{2(3)} = \frac{0}{6} = 0$$

$$\begin{aligned} y &= 3(0)^2 - 3 \\ &= 0 - 3 \\ &= -3 \end{aligned}$$

Describe how the parent function $y = x^2$ was transformed to create the given function.

⑦ $y = -\left(\frac{1}{3}x + 6\right)^2 - 4$

reflect over x-axis
h stretch by 3
left 6
down 4

⑧ $y = 5(-x - 2)^2 + 3$

v stretch by 5
reflect over y-axis
right 2
up 3