

Transformations of Parent Graphs Assignment

KEY!

Algebra 2

Name _____

ID: 1

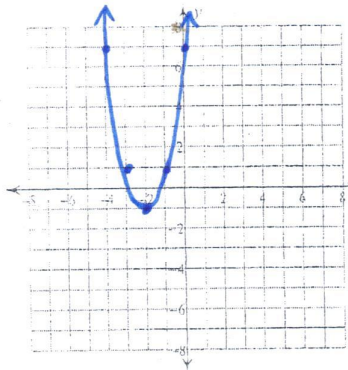
Assignment

Date _____

Period _____

Identify the vertex and axis of symmetry of each. Then sketch the graph.

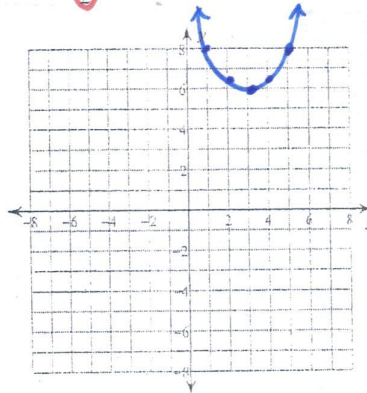
1) $y = 2(x+2)^2 - 1$



Vertex: $(-2, -1)$
 axis: $x = -2$

$\Rightarrow 1 \uparrow 1 \cdot 2 = \uparrow 2$
 $\Rightarrow 2 \uparrow 4 \cdot 2 = \uparrow 8$

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

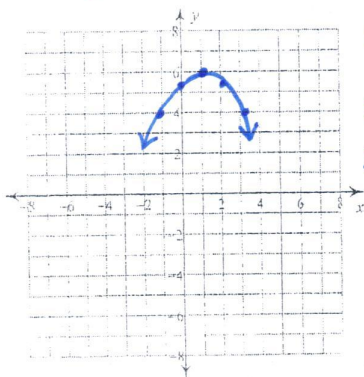


Vertex: $(3, 6)$

axis: $x = 3$

$\Rightarrow 1 \uparrow 1 \cdot \frac{1}{2} = \uparrow \frac{1}{2}$
 $\Rightarrow 2 \uparrow 4 \cdot \frac{1}{2} = \uparrow 2$

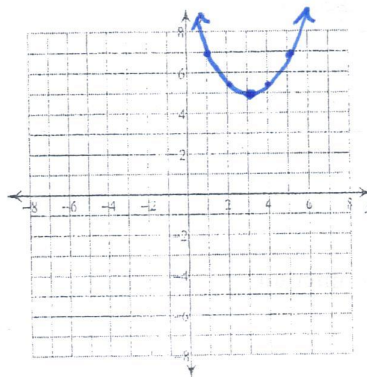
3) $y = -\frac{1}{2}(x-1)^2 + 6$



Vertex: $(1, 6)$
 axis: $x = 1$

$\Rightarrow 1 \uparrow 1 \cdot \frac{1}{2} = \downarrow \frac{1}{2}$
 $\Rightarrow 2 \uparrow 4 \cdot \frac{1}{2} = \downarrow 2$

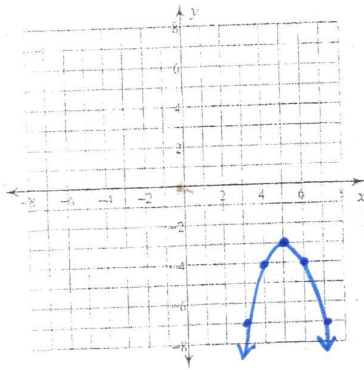
4) $y = \frac{1}{2}(x-3)^2 + 5$



Vertex: $(3, 5)$

$\Rightarrow 1 \uparrow 1 \cdot \frac{1}{2} = \uparrow \frac{1}{2}$
 $\Rightarrow 2 \uparrow 4 \cdot \frac{1}{2} = \uparrow 2$

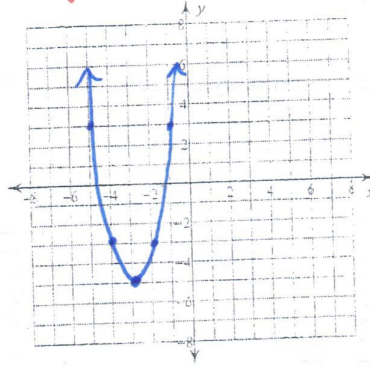
5) $y = -(x-5)^2 - 3$



a of s: $x=5$
Vertex: $(5, -3)$

$\Rightarrow 1 \uparrow 1 = \downarrow 1$
 $\Rightarrow 2 \uparrow 4 = \downarrow 4$

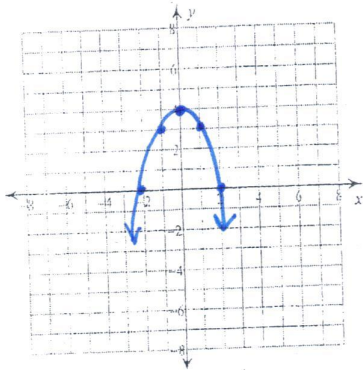
6) $y = 2(x+3)^2 - 5$



a of s: $x=-3$
Vertex: $(-3, -5)$

$\Rightarrow 1 \uparrow 1 \cdot 2 = \uparrow 2$
 $\Rightarrow 2 \uparrow 4 \cdot 2 = \uparrow 8$

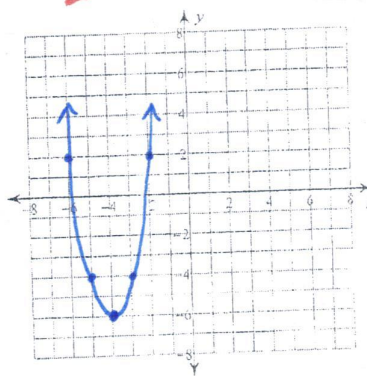
7) $y = -\frac{1}{4}x^2 + 4$



a of s: $x=0$
Vertex: $(0, 4)$

$\Rightarrow 1 \uparrow 1 = \downarrow 1$
 $\Rightarrow 2 \uparrow 4 = \downarrow 4$

8) $y = 2(x+4)^2 - 6$

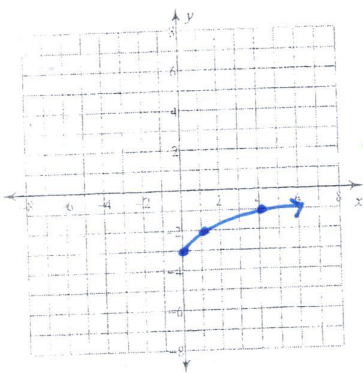


a of s: $x=-4$
Vertex: $(-4, -6)$

$\Rightarrow 1 \uparrow 1 \cdot 2 = \uparrow 2$
 $\Rightarrow 2 \uparrow 4 \cdot 2 = \uparrow 8$

Sketch the graph of each function.

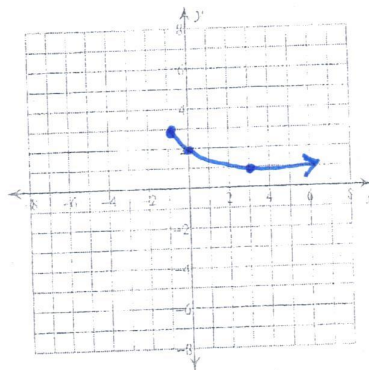
9) $y = \sqrt{x} - 3$



Vertex: $(0, -3)$

$\rightarrow 1 \uparrow 1$
 $\rightarrow 4 \uparrow 2$

10) $y = -\sqrt{x+1} + 3$

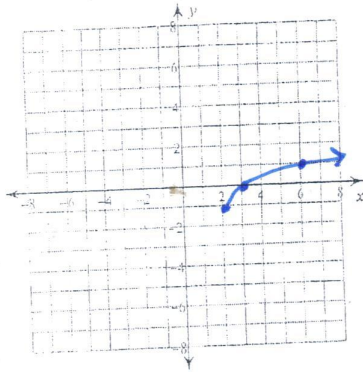


Vertex: $(-1, 3)$

$\rightarrow 1 \uparrow 1 = \downarrow 1$
 $\rightarrow 4 \uparrow 2 = \downarrow 2$

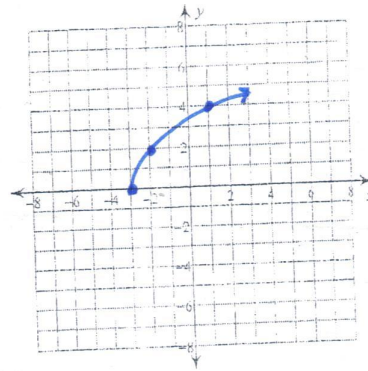
11) $y = \sqrt{x-2} - 1$

Vertex: $(2, -1)$



12) $y = 2\sqrt{x+3}$

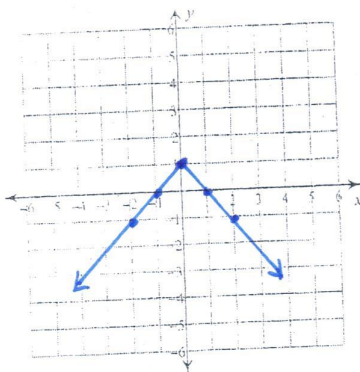
Vertex: $(-3, 0)$



Graph each equation.

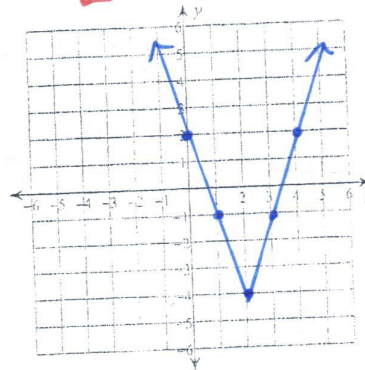
13) $y = |x| - 1$

Vertex: $(0, -1)$
a.o.f.s: $X=0$



14) $y = 3|x-2| - 4$

Vertex: $(2, -4)$
a.o.f.s: $X=2$

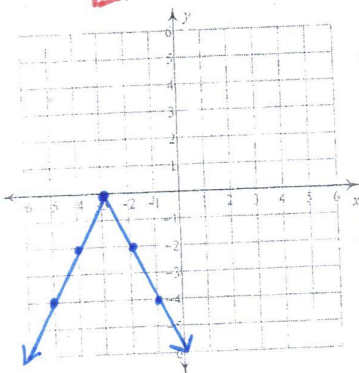


$\Rightarrow 1 \uparrow 1 \cdot 3 = \uparrow 3$
 $\Rightarrow 2 \uparrow 2 \cdot 3 = \uparrow 6$

15) $y = -2|x+3|$

flip

Vertex: $(-3, 0)$
a.o.f.s: $X=-3$

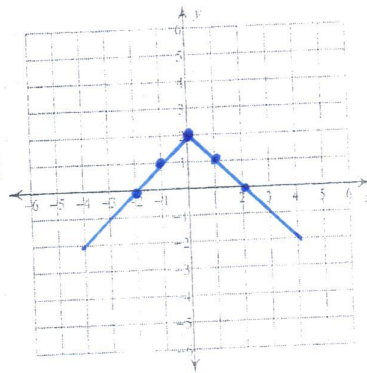


$\Rightarrow 1 \uparrow 1 \cdot 2 = \downarrow 2$
 $\Rightarrow 2 \uparrow 2 \cdot 2 = \downarrow 4$

16) $y = -|x| + 2$

flip

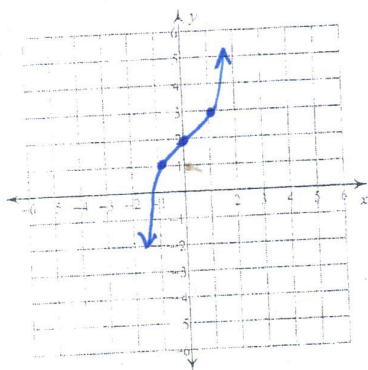
Vertex: $(0, 2)$
a.o.f.s: $X=0$



$\Rightarrow 1 \uparrow 1 = \downarrow 1$
 $\Rightarrow 2 \uparrow 2 = \downarrow 2$

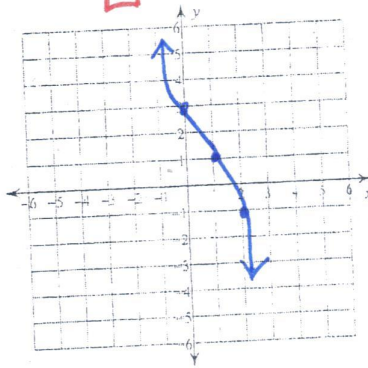
17) $y = x^3 + 2$

vertex: (0, 2)



18) $y = \overset{\text{flip}}{\ominus} 2(x-1)^3 + 1$

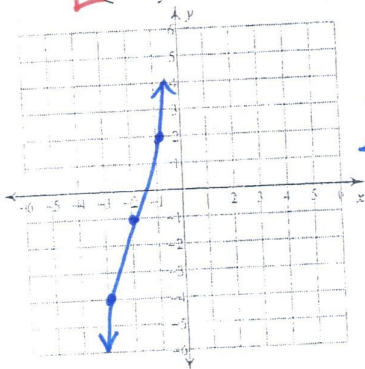
vertex: (1, 1)



→ | $\uparrow 1 \cdot 2 = \downarrow 2$
 ← | $\downarrow 1 \cdot 2 = \uparrow 2$

19) $y = \boxed{3}(x+2)^3 - 1$

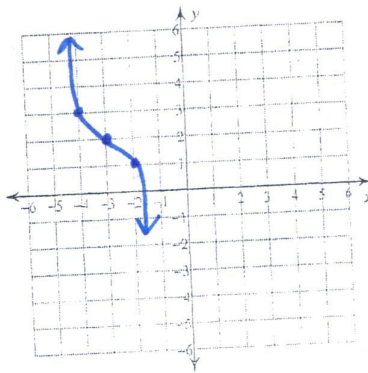
vertex: (-2, -1)



→ | $\uparrow 1 \cdot 3 = \uparrow 3$
 ← | $\downarrow 1 \cdot 3 = \downarrow 3$

20) $y = \overset{\text{flip}}{\ominus} (x+3)^3 + 2$

vertex: (-3, 2)



→ | $\uparrow 1 = \downarrow 1$
 ← | $\downarrow 1 = \uparrow 1$