

* Use separate paper for tables, if needed *

Name KEY Class _____ Date _____

9-1

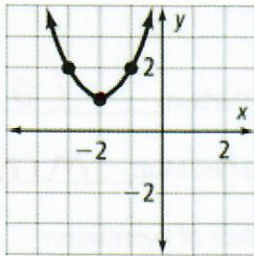
Practice

Form K

Quadratic Graphs and Their Properties

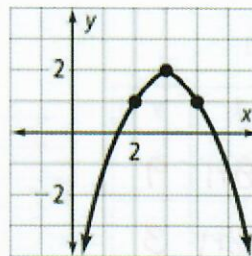
Identify the vertex of each graph. Tell whether it is a maximum or a minimum.

1.



vertex
(-2, 1)
minimum

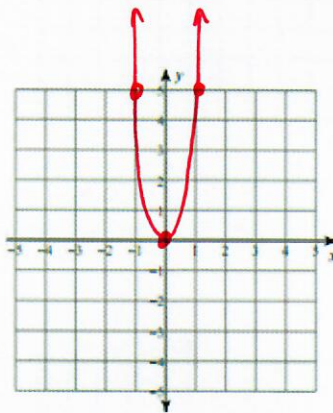
2.



vertex
(3, 2)
maximum

3. Graph $y = 5x^2$.

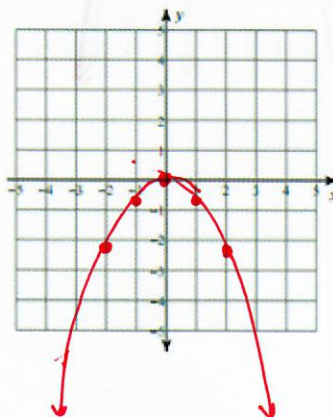
x	$y = 5x^2$	y
-2	$5(2)^2 = 5(4)$	20
-1	$5(-1)^2 = 5(1)$	5
0	$5(0)^2 = 5(0)$	0
1	$5(1)^2 = 5(1)$	5
2	$5(2)^2 = 5(4)$	20



Vertex: (0, 0)
Max/Min: minimum
Axis of Symmetry: x = 0
Width: narrower
Domain: All $\mathbb{R}; (-\infty, \infty)$
Range: All $\mathbb{R} \geq 0; [0, \infty)$

4. Graph $y = -\frac{2}{3}x^2$.

x	$y = -\frac{2}{3}x^2$	y
-2	$-\frac{2}{3}(-2)^2 = -\frac{2}{3}(4)$	$-\frac{8}{3}$
-1	$-\frac{2}{3}(-1)^2 = -\frac{2}{3}(1)$	$-\frac{2}{3}$
0	$-\frac{2}{3}(0)^2 = 0$	0
1	$-\frac{2}{3}(1)^2$	$-\frac{2}{3}$
2	$-\frac{2}{3}(2)^2 = -\frac{2}{3}(4)$	$-\frac{8}{3}$



Vertex: (0, 0)
Max/Min: maximum
Axis of Symmetry: x = 0
Width: wider
Domain: All $\mathbb{R}; (-\infty, \infty)$
Range: All $\mathbb{R} \leq 0; (-\infty, 0]$

Order each group of quadratic functions from the widest to the narrowest graph.

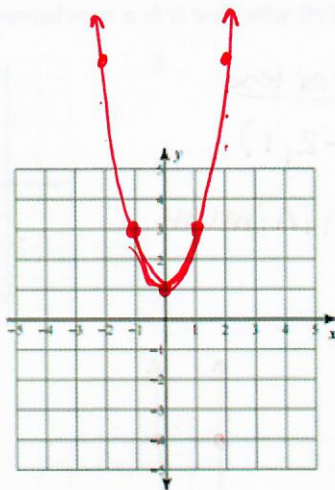
5. $y = -2x^2$; $y = -4x^2$; $y = -3x^2$

6. $y = \frac{1}{3}x^2$; $y = 3x^2$; $y = \frac{1}{6}x^2$

$y = -2x^2$; $y = -3x^2$; $y = -4x^2$ $y = \frac{1}{6}x^2$; $y = \frac{1}{3}x^2$; $y = 3x^2$

7. Graph $y = 2x^2 + 1$

x	$y = 2x^2 + 1$	y
-2	$2(-2)^2 + 1 = 8 + 1$	9
-1	$2(-1)^2 + 1 = 2 + 1$	3
0	$2(0)^2 + 1 = 0 + 1$	1
1	$2(1)^2 + 1 = 2 + 1$	3
2	$2(2)^2 + 1 = 8 + 1$	9



Vertex: (0, 1)

Max/Min: minimum

Axis of Symmetry: $x = 0$

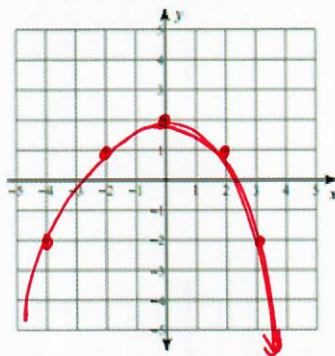
Width: narrower

Domain: All \mathbb{R} ; $(-\infty, \infty)$

Range: All $\mathbb{R} \geq 1$; $[1, \infty)$

8. Graph $y = -\frac{1}{4}x^2 + 2$

x	$y = -\frac{1}{4}x^2 + 2$	y
-4	$-\frac{1}{4}(-4)^2 + 2$ $-\frac{1}{4}(16) + 2$	-2
-2	$-\frac{1}{4}(-2)^2 + 2$ $-\frac{1}{4}(4) + 2$	1
0	$-\frac{1}{4}(0)^2 + 2$	2
2	$-\frac{1}{4}(2)^2 + 2 = -1 + 2$	1
4	$-\frac{1}{4}(4)^2 + 2$	-2



Vertex: (0, 2)

Max/Min: maximum

Axis of Symmetry: $x = 0$

Width: wider

Domain: All \mathbb{R} ; $(-\infty, \infty)$

Range: All $\mathbb{R} \leq 2$; $(-\infty, 2]$

$= -\frac{1}{4}(16) + 2$

$= -4 + 2$

$= -2$