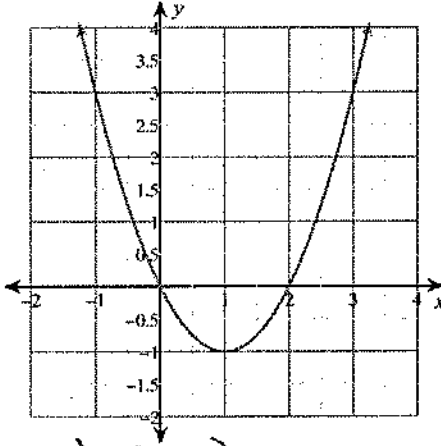


Graphing Quadratic Functions $y = (x - p)^2 + q$ Date _____ Period _____

Sketch the graph of each function. For each function, state the: a) coordinates of the vertex, b) max/min and value, c) equation of the axis of symmetry, d) domain, e) range, and f) describe the transformations on the graph $y = x^2$.

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



a) $(1, -1)$

b) min, -1

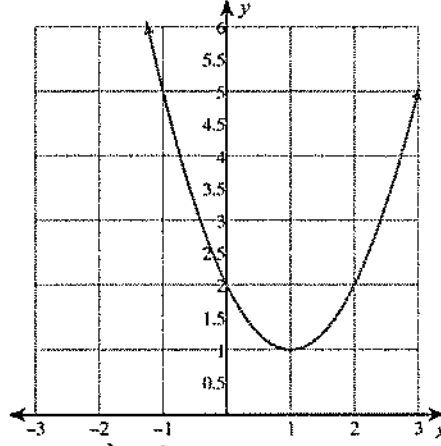
c) $x = 1$

d) $x \in \mathbb{R}$

e) $\{y \mid y \geq -1\}$

f) h.t. 1 right, v.t. 1 down

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



a) $(1, 1)$

b) min, 1

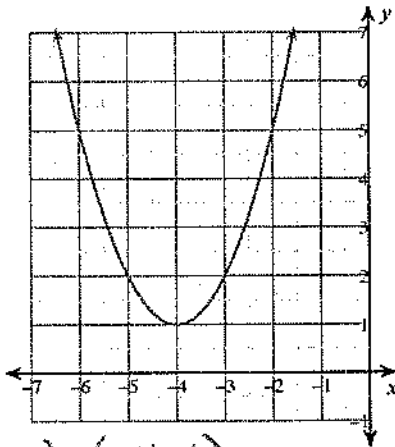
c) $x = 1$

d) $x \in \mathbb{R}$

e) $\{y \mid y \geq 1\}$

f) h.t. 1 right, v.t. 1 up

3) $y = (x + 4)^2 + 1$



a) $(-4, 1)$

b) min, 1

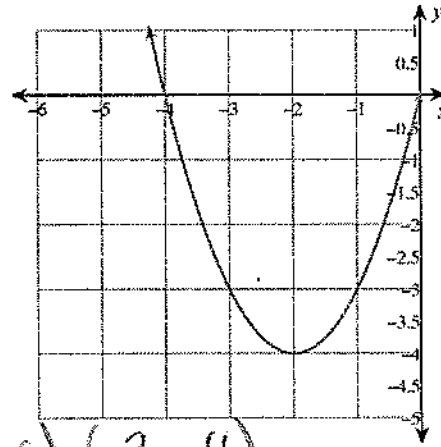
c) $x = -4$

d) $x \in \mathbb{R}$

e) $\{y \mid y \geq 1, y \in \mathbb{R}\}$

f) h.t. 4 left, v.t. 1 up

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



a) $(-2, -4)$

b) min, -4

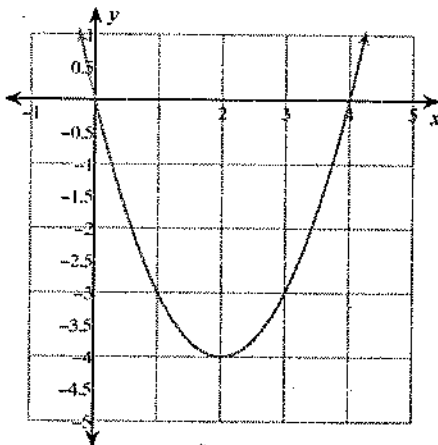
c) $x = -2$

d) $x \in \mathbb{R}$

e) $\{y \mid y \geq -4, y \in \mathbb{R}\}$

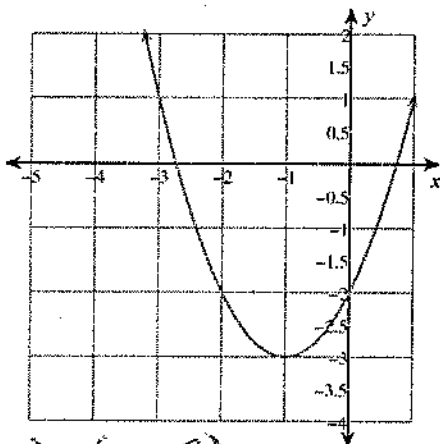
f) h.t. 2 left, v.t. 4 down

5) $y = (x-2)^2 - 4$



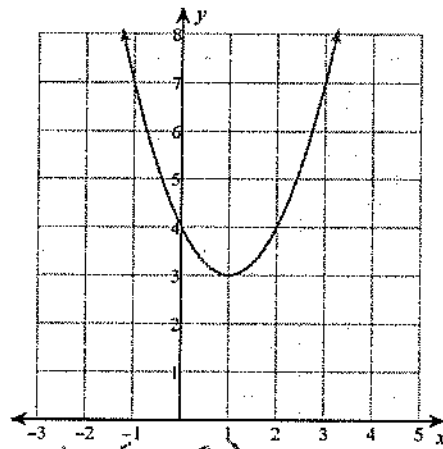
- a) (2, -4)
- b) min, -4
- c) $x = 2$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq -4, y \in \mathbb{R}\}$
- f) h.t. 2 right
v.t. 4 down

7) $y = (x+1)^2 - 3$



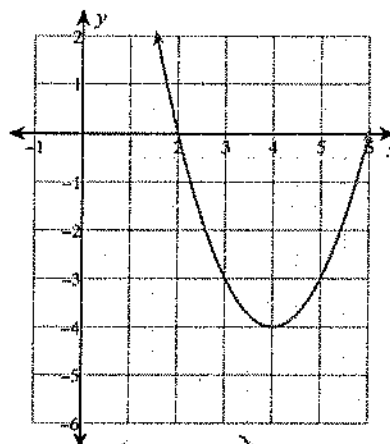
- a) (-1, -3)
- b) min, -3
- c) $x = -1$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq -3, y \in \mathbb{R}\}$
- f) h.t. 1 left
v.t. 3 down

6) $y = (x-1)^2 + 3$



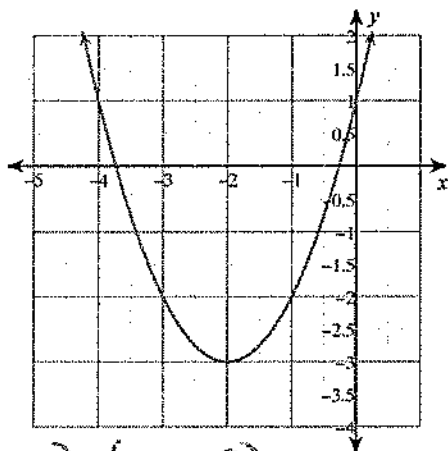
- a) (1, 3)
- b) min, 3
- c) $x = 1$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq 3, y \in \mathbb{R}\}$
- f) h.t. 1 right
v.t. 3 up

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



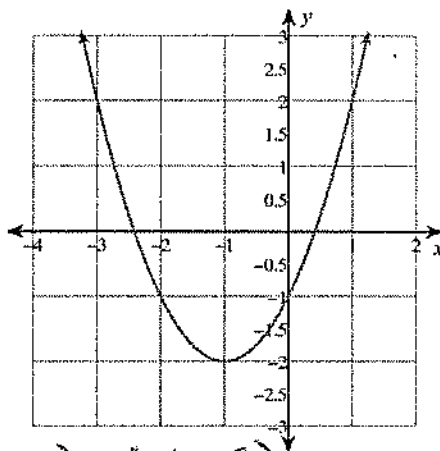
- a) (4, -4)
- b) min, -4
- c) $x = 4$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq -4, y \in \mathbb{R}\}$
- f) h.t. 4 right
v.t. 4 down

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



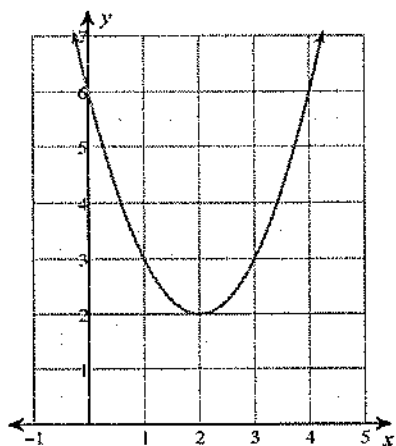
- a) $(-2, -3)$
- b) min, -3
- c) $x = -2$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq -3, y \in \mathbb{R}\}$
- f) h.t. 2 left
v.t. 3 down

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



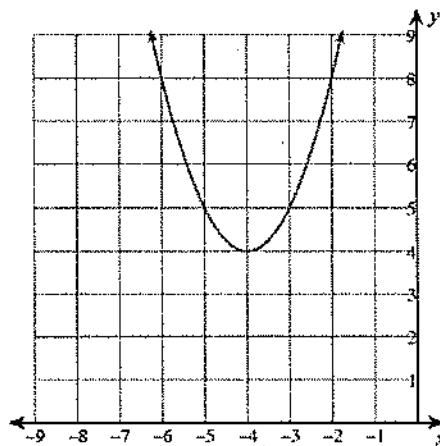
- a) $(-1, -2)$
- b) min, -2
- c) $x = -1$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq -2, y \in \mathbb{R}\}$
- f) h.t. 1 left
v.t. 2 down

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



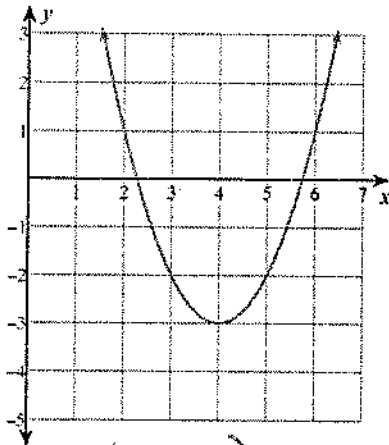
- a) $(2, 2)$
- b) min, 2
- c) $x = 2$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq 2, y \in \mathbb{R}\}$
- f) h.t. 2 right
v.t. 2 up

12) $y = (x+4)^2 + 4$



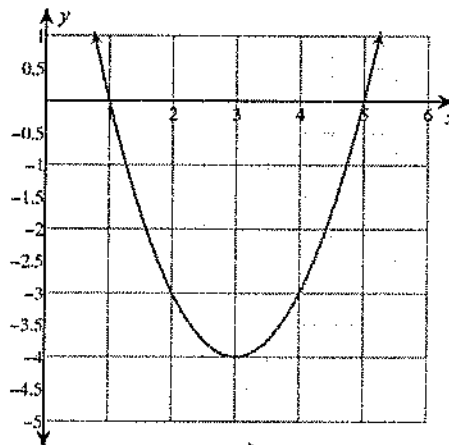
- a) $(-4, 4)$
- b) min, 4
- c) $x = -4$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq 4, y \in \mathbb{R}\}$
- f) h.t. 4 left
v.t. 4 up

13) $y = (x-4)^2 - 3$



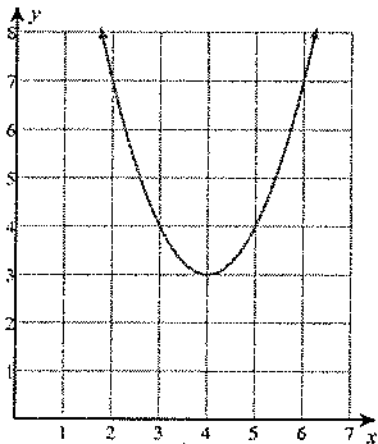
- a) (4, -3)
- b) min, -3
- c) $x = 4$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq -3, y \in \mathbb{R}\}$
- f) h.t. 4 right
v.t. 3 down

14) $y = (x-3)^2 - 4$



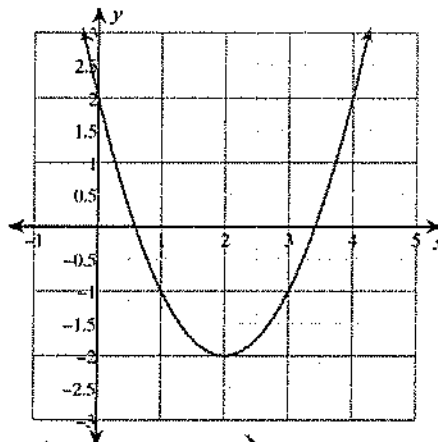
- a) (3, -4)
- b) min, -4
- c) $x = 3$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq -4, y \in \mathbb{R}\}$
- f) h.t. 3 right
v.t. 4 down

15) $y = (x-4)^2 + 3$



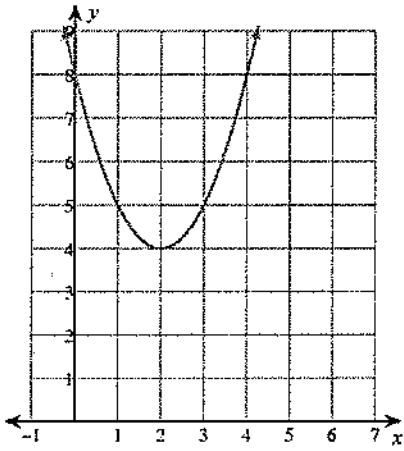
- a) (4, 3)
- b) min, 3
- c) $x = 4$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq 3, y \in \mathbb{R}\}$
- f) h.t. 4 right
v.t. 3 up

16) $y = (x-2)^2 - 2$



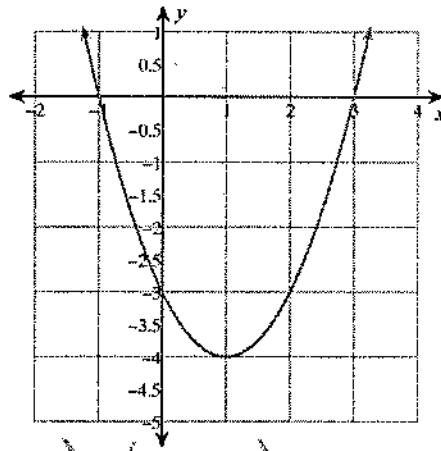
- a) (2, -2)
- b) min, -2
- c) $x = 2$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq -2, y \in \mathbb{R}\}$
- f) h.t. 2 right
v.t. 2 down

17) $y = (x-2)^2 + 4$



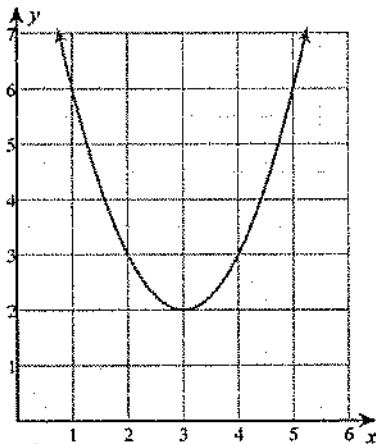
- a) (2, 4)
- b) min, 4
- c) $x=2$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq 4, y \in \mathbb{R}\}$
- f) h.t. 2 right
v.t. 4 up

18) $y = (x-1)^2 - 4$



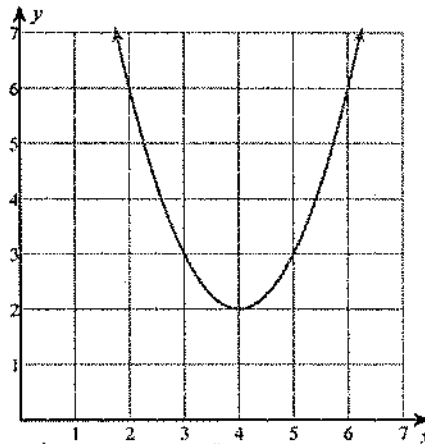
- a) (1, -4)
- b) min, -4
- c) $x=1$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq -4, y \in \mathbb{R}\}$
- f) h.t. 1 right
v.t. 4 down

19) $y = (x-3)^2 + 2$



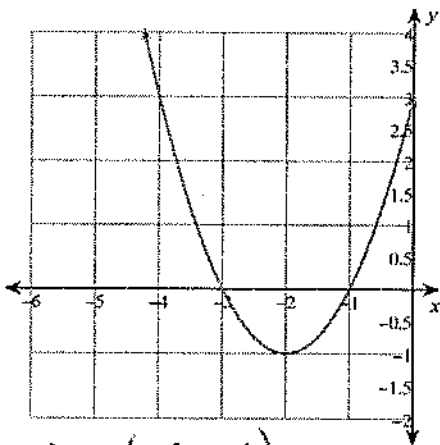
- a) (3, 2)
- b) min, 2
- c) $x=3$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq 2, y \in \mathbb{R}\}$
- f) h.t. 3 right
v.t. 2 up

20) $y = (x-4)^2 + 2$



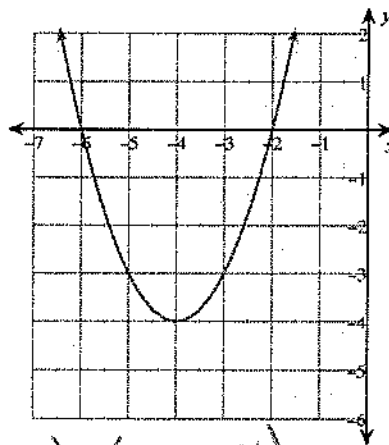
- a) (4, 2)
- b) min, 2
- c) $x=4$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq 2, y \in \mathbb{R}\}$
- f) h.t. 4 right
v.t. 2 up

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



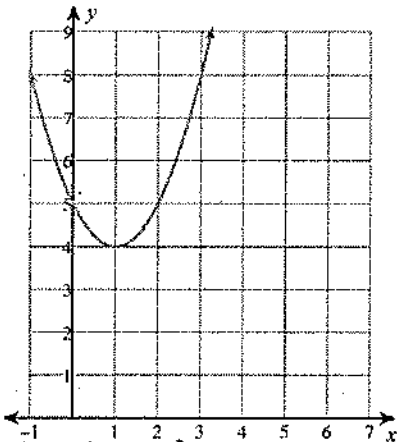
- a) $(-2, -1)$
- b) min, -1
- c) $x = -2$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq -1, y \in \mathbb{R}\}$
- f) h.t. 2 left
v.t. 1 down

22) $y = (x+4)^2 - 4$



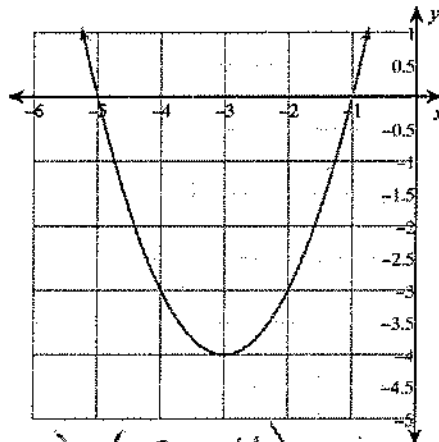
- a) $(-4, -4)$
- b) min, -4
- c) $x = -4$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq -4, y \in \mathbb{R}\}$
- f) h.t. 4 left
v.t. 4 down

23) $y = (x-1)^2 + 4$



- a) $(1, 4)$
- b) min, 4
- c) $x = 1$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq 4, y \in \mathbb{R}\}$
- f) h.t. 1 right
v.t. 4 up

24) $y = (x+3)^2 - 4$



- a) $(-3, -4)$
- b) min, -4
- c) $x = -3$
- d) $x \in \mathbb{R}$
- e) $\{y \mid y \geq -4, y \in \mathbb{R}\}$
- f) h.t. 3 left
v.t. 4 down