Name: Key Class: _____ Date: _____ ID: X

Alg 1 Topic 8.1 to 8.3 Quest Practice

Standard: ax^2+bx+c

aos: $x=\frac{-b}{2a}$

vertex: $a(x-h)^2+k$

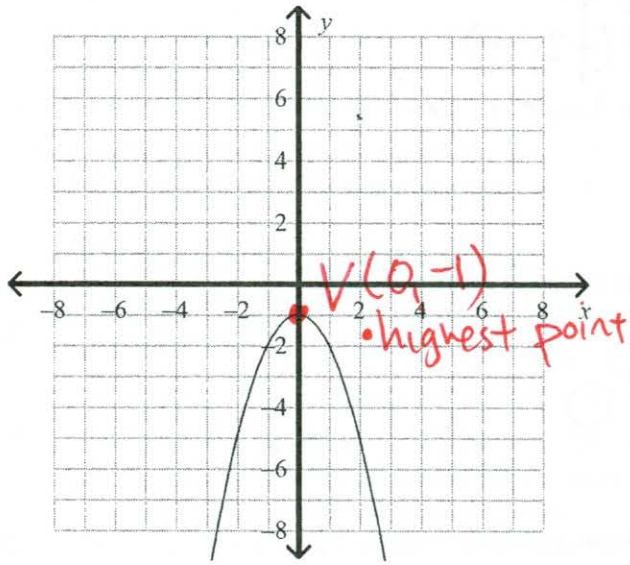
$v(h,k)$ aos: $x=h$

V: (____, ?)

y-intercept: c

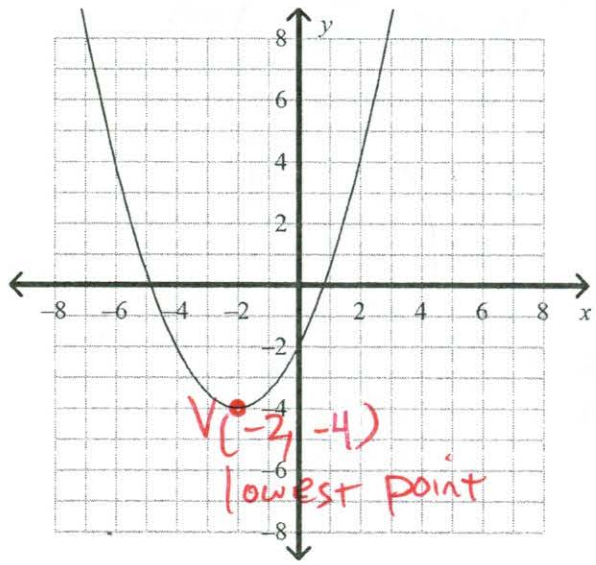
What are the coordinates of the vertex of the graph or table? Is it a maximum or minimum?

C 1.



a. (–1, 0); maximum
b. (–1, 0); minimum
c. (0, –1); maximum
d. (0, –1); minimum

C 2.



a. (–4, –2); minimum
b. (–2, –4); maximum
c. (–2, –4); minimum
d. (–4, –2); maximum

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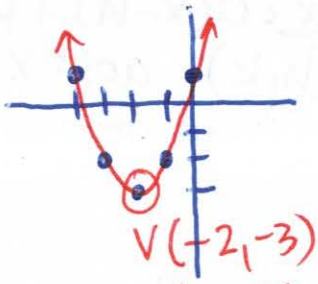
B

3.

X	Y
0	1
–1	–2
–2	–3
–3	–2
–4	1



a. (–4, 1); minimum
b. (–2, –3); minimum
c. (–2, –3); maximum
d. (1, 0); maximum

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

C

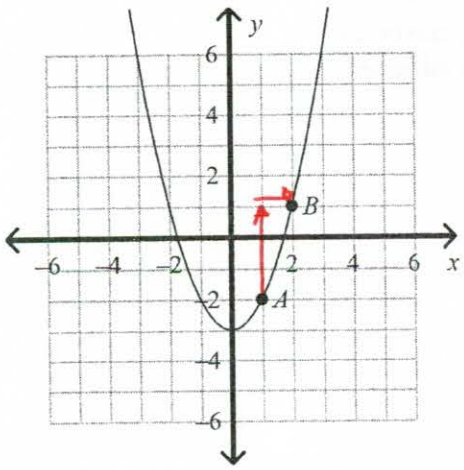
widest narrowest

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

a. $y = -3x^2$, $y = -5x^2$, $y = -4x^2$
b. $y = -5x^2$, $y = -4x^2$, $y = -3x^2$
c. $y = -3x^2$, $y = -4x^2$, $y = -5x^2$
d. $y = -4x^2$, $y = -3x^2$, $y = -5x^2$

A

5. What is the rate of change for the interval between A and B?



slope

$\frac{y_2 - y_1}{x_2 - x_1}$ or $\frac{\text{rise}}{\text{run}}$

$= \frac{+3}{1}$

a. 3
b. $\frac{1}{3}$
c. 0
d. 1

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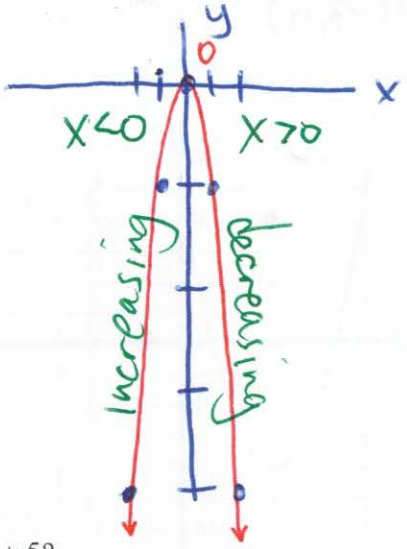
C

6. Use the table of $f(x) = -4x^2$. Over what interval is the function increasing? Over what interval is the function decreasing?

x	$f(x)$	(x, y)
–2	–16	(–2, –16)
–1	–4	(–1, –4)
0	0	(0, 0)
1	–4	(1, –4)
2	–16	(2, –16)



a. decreasing over all real numbers
b. decreasing over $x < 0$ and increasing over $x > 0$
c. increasing over $x < 0$ and decreasing over $x > 0$
d. increasing over all real numbers

C

7. What steps transform the graph of $y = x^2$ to $y = -(x + 3)^2 + 5$?

a: -1 refl.
h: -3 left
k: 5 up

a. translate 3 units to the right, translate down 5 units
b. translate 3 units to the left, translate up 5 units
c. reflect across the x-axis, translate 3 units to the left, translate up 5 units
d. reflect across the x-axis, translate 3 units to the right, translate down 5 units

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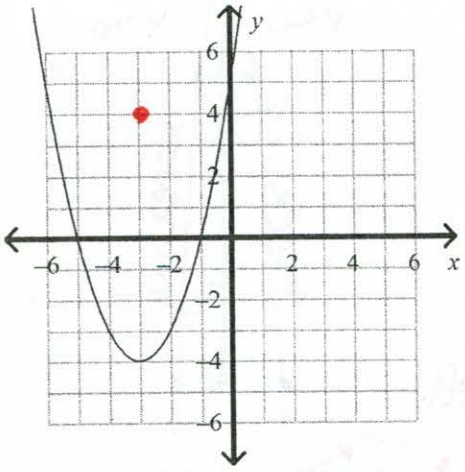
Graph each function. How is each graph a translation of $f(x) = x^2$?

B V:(-3,4)

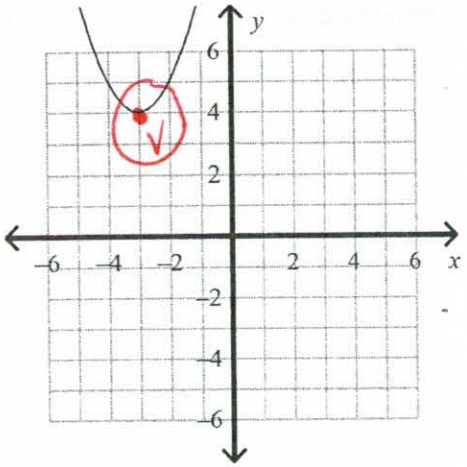
8. $y = (x+3)^2 + 4$

a.



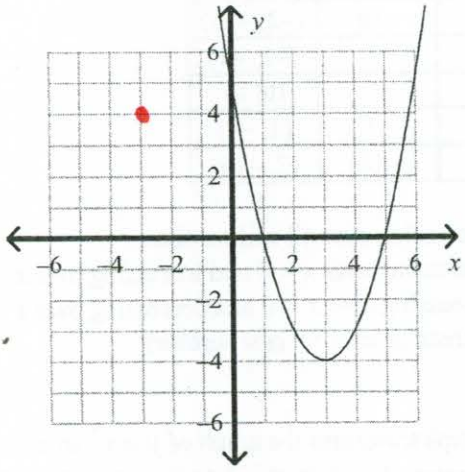
$f(x)$ translated down 4 unit(s) and translated to the left 3 unit(s)

b.



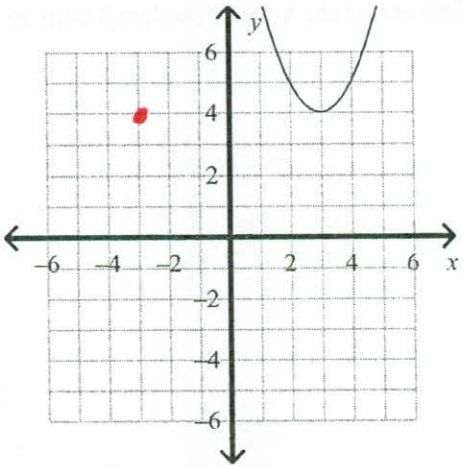
$f(x)$ translated up 4 unit(s) and translated to the left 3 unit(s).

c.



$f(x)$ translated down 4 unit(s) and translated to the right 3 unit(s)

d.



$f(x)$ translated up 4 unit(s) and translated to the right 3 unit(s)

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C 9. Identify the vertex and the axis of symmetry of the graph of the function $y = 2(x + 2)^2 - 4$.

a. vertex: (–2, 4);
axis of symmetry: $x = -2$

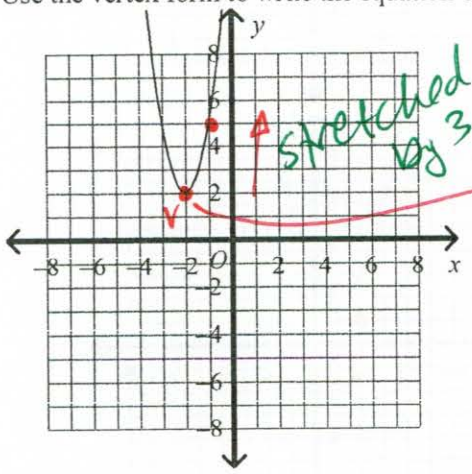
b. vertex: (2, –4);
axis of symmetry: $x = 2$

c. vertex: (–2, –4);
axis of symmetry: $x = -2$

d. vertex: (2, 4);
axis of symmetry: $x = 2$

V: (h, k) aos: x = h
(–2, –4) x = –2

C 10. Use the vertex form to write the equation of the parabola.



h, k
(–2, 2) → $a(x-h)^2+k$
$(x--2)^2+2$
$a(x+2)^2+2$
stretch by 3

a. $y = 3(x - 2)^2 + 2$

b. $y = 3(x - 2)^2 - 2$

c. $y = 3(x + 2)^2 + 2$

d. $y = (x + 2)^2 + 2$

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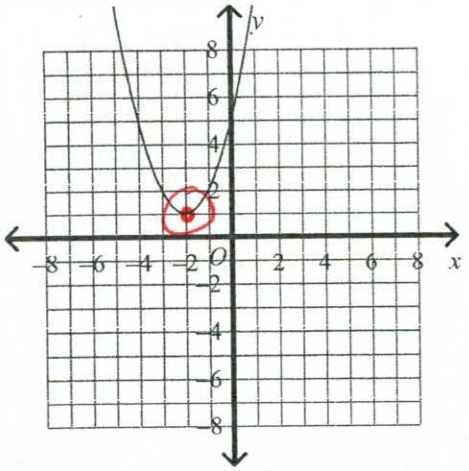
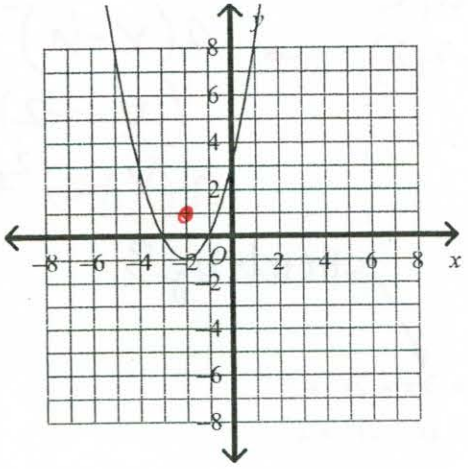
A V: (-2, 1)

11. Which is the graph of $y = (x + 2)^2 + 1$?

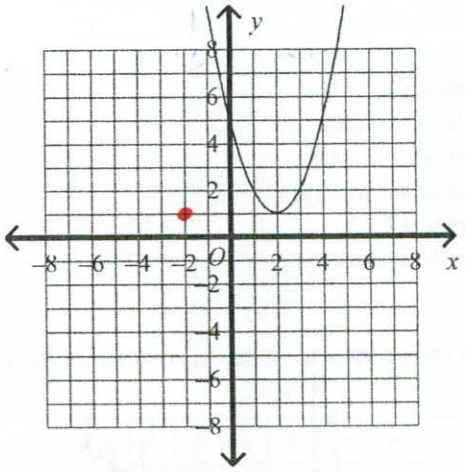
a.



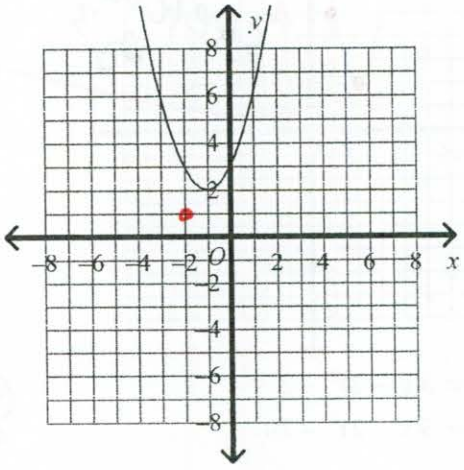
b.



c.



d.



Name: _____ ID: X

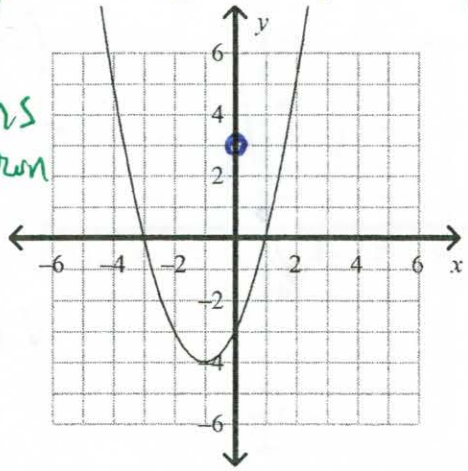
What is the graph of the equation?

C/D

____ 12. $y = -x^2 + 2x + 3$

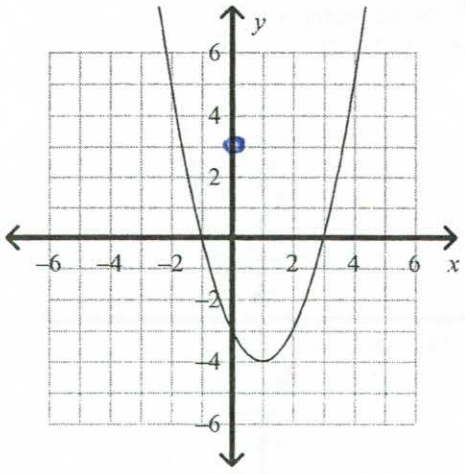
ax^2+bx+c → y-intercept

a.

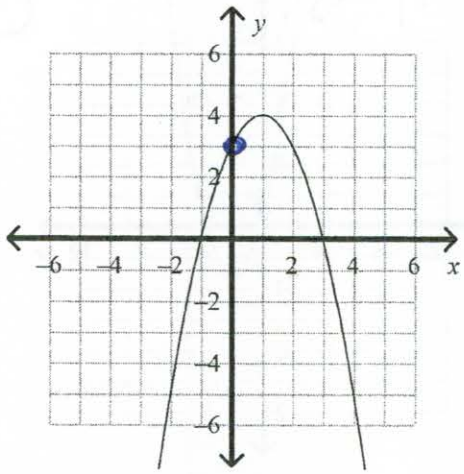


opens down

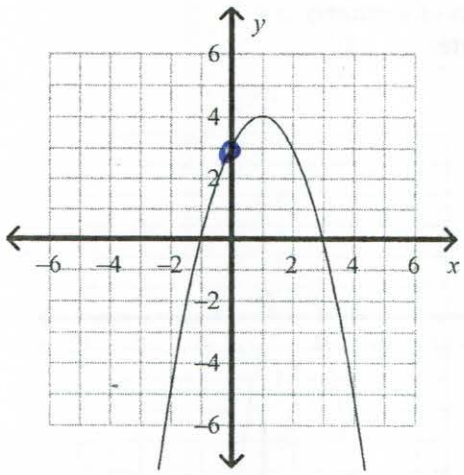
b.



c.



d.



duplicate answers

Name: _____ ID: X

Graph the function. Identify the vertex and axis of symmetry.

C 13. $f(x) = x^2 + 4x + 1$

ax^2+bx+c ① y-intercept

aos: $\frac{-b}{2a} = \frac{-(4)}{2(1)} = \frac{-4}{2} = -2$ ②

vertex (-2, ?)

$(-2)^2+4(-2)+1$

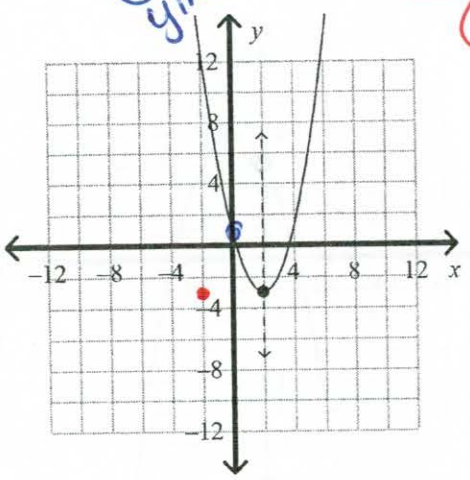
$= 4 - 8 + 1$

$= -4 + 1$

$= -3$ ③

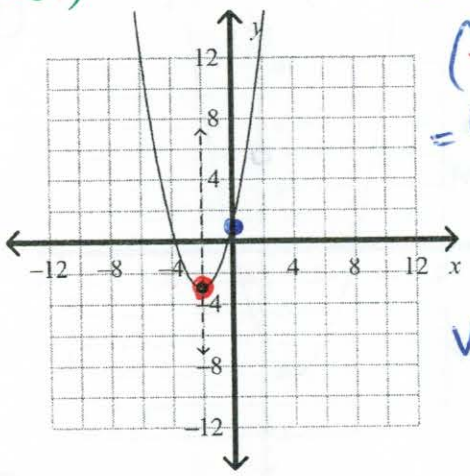
V: $(-2, -3)$

a.



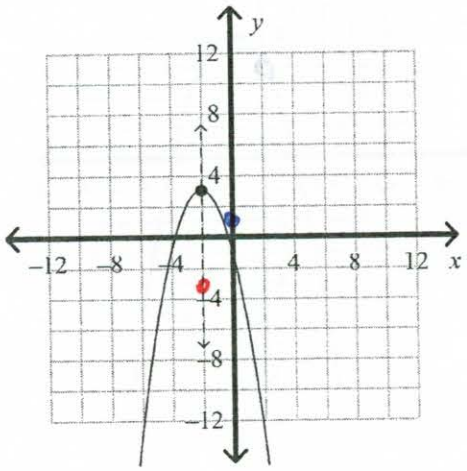
axis of symmetry: $x = 2$
vertex: (2, –3)

c.



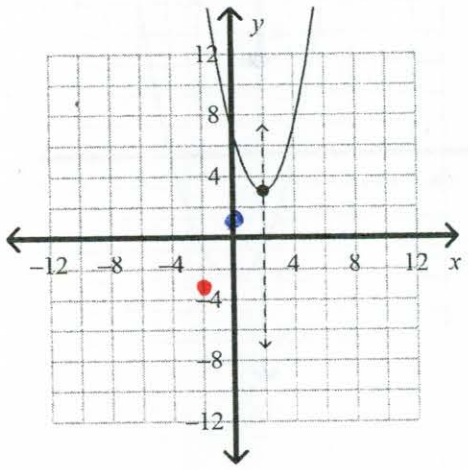
axis of symmetry: $x = -2$
vertex: (–2, –3)

b.



axis of symmetry: $x = -2$
vertex: (–2, 3)

d.



axis of symmetry: $x = 2$
vertex: (2, 3)

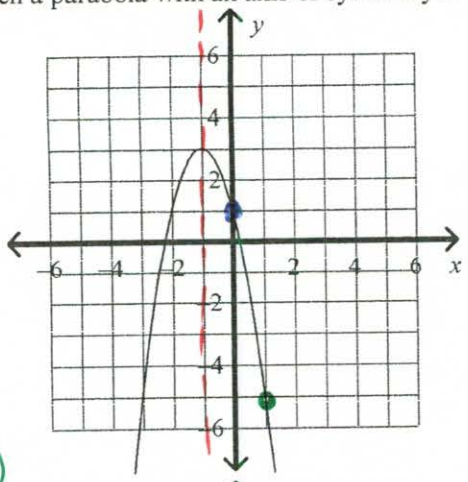
Name: _____ ID: X

A

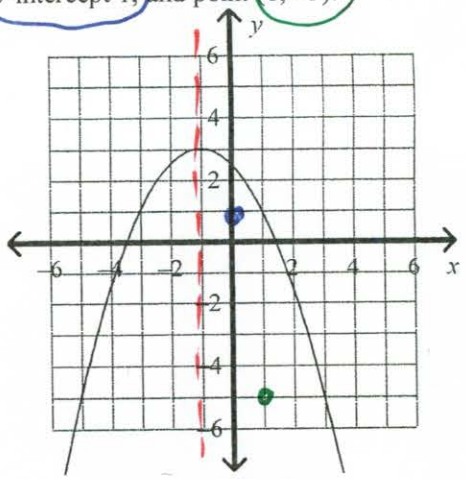
14. Sketch a parabola with an axis of symmetry $x = -1$, y-intercept 1, and point $(1, -5)$.

aos

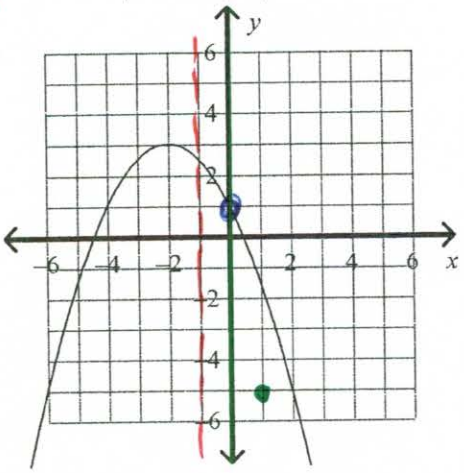
a.



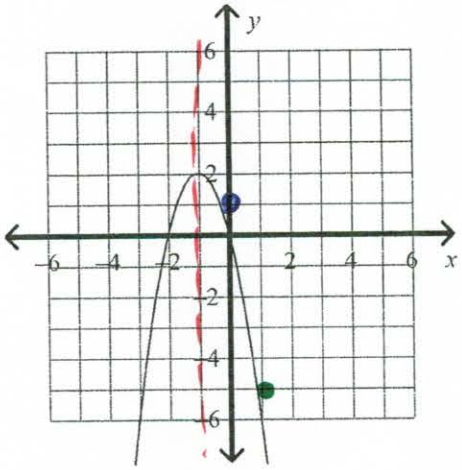
c.



b.



d.



What is the vertex form of the equation?

C

15. $y = x^2 - 2x + 8$

a. $y = (x+1)^2 + 7$

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

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

d. $y = (x-1)^2 - 7$

$(x-1)(x-1)+7$

$x^2-x-x+1+7$

x^2-2x+8 (11)

$(x+1)(x+1)+7$

$x^2+x+x+1+7$

x^2+2x+8 (11)

$(x+1)(x+1)-7$

$x^2+x+x+1-7$

x^2+2x-6 (11)