

Key

Per: _____ Date: _____ Score: /100

Show work for full credit. Circle, box, or highlight your answers.

Each question's point value appears in < >.

Graph the following: <3 ea.>

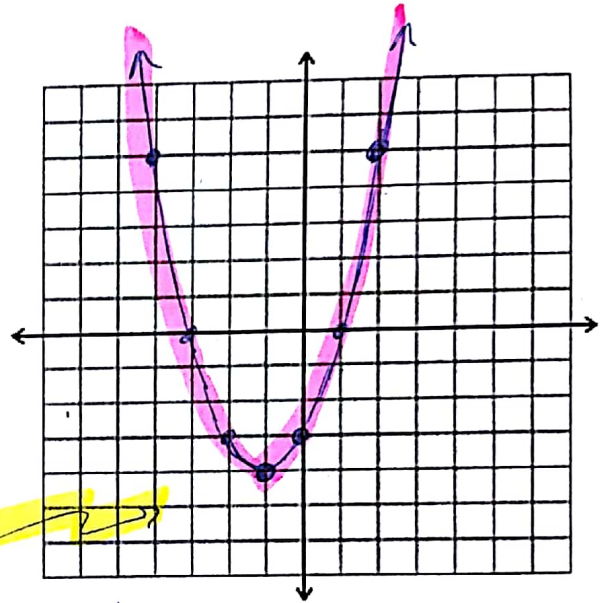
1. $y = x^2 + 2x - 3$

$V(-1, -4)$

$-\frac{b}{2a}; -\frac{(2)}{2(1)} = -1$

$$\begin{aligned} y &= (-1)^2 + 2(-1) - 3 \\ y &= 1 - 2 - 3 \\ y &= -4 \end{aligned}$$

$V(-1, -4)$

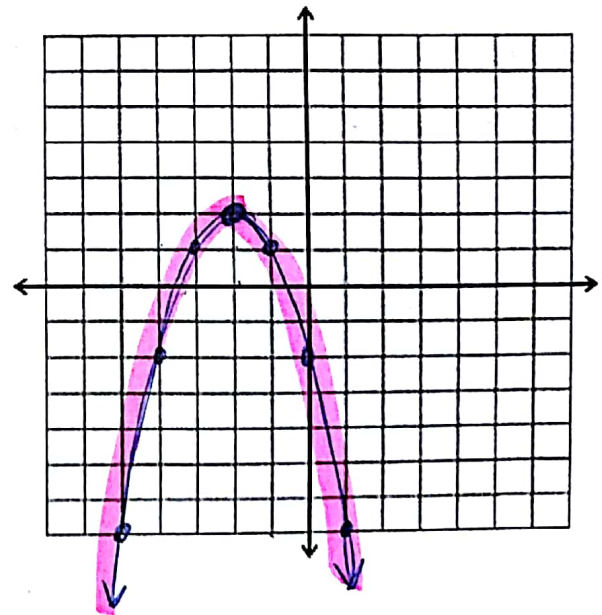


2. $y = -x^2 - 4x - 2$

$V(-2, 2)$

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

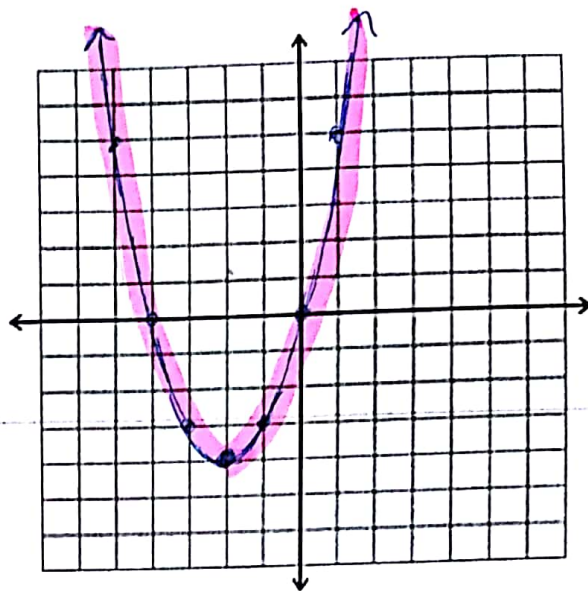
$$\begin{aligned} y &= -(-2)^2 - 4(-2) - 2 \\ &= -4 + 8 - 2 \\ &= 2 \end{aligned}$$



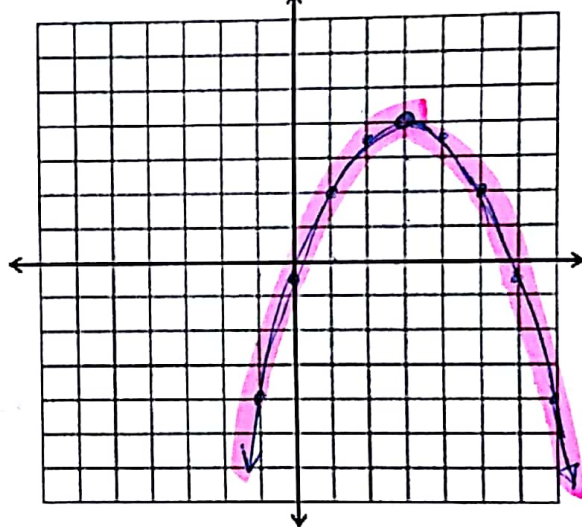
-more-

Graph the following: <3 ea.>

3. $y = (x+2)^2 - 4$
 $V(-2, -4)$, $a=1$



4. $y = -\frac{1}{2}(x-3)^2 + 4$
 $V(3, 4)$, $a = -1/2$



Identify the axis of symmetry and the coordinates of the vertex; state whether there is a max or min: <3 ea.>

5. $y = -2(x-4)^2 + 9$
 axis of symmetry: $x = 4$
 circle one: max min
 vertex: $(4, 9)$
 opens down $\downarrow$,
 has max.

6. $y = x^2 - 8x + 7$
 axis of symmetry: $x = 4$
 circle one: max min
 vertex: $(4, -9)$
 $x = \frac{-b}{2a} = \frac{-(-8)}{2(1)} = \frac{8}{2} = 4$
 opens up: $\uparrow$
 has min

-more-

$(4)^2 - 8(4) + 7 = 16 - 32 + 7 = -9$

Factor each of the following: <3 ea.>

7. $4x^2 - 8x$

GCF

$4x(x-2)$

8. $16x^2 - 49$

D.S

$(4x-7)(4x+7)$

9. $x^2 - 10x + 25$

PST

$(x-5)^2$

10. $x^2 - 8x + 15$

$(x-5)(x-3)$

11. $x^2 - 5x - 24$

$(x-8)(x+3)$

12. $2x^2 - 11x + 9$

$x^2 - 11x + 18$

$(x-9)(x-2)$

$(2x-9)(x-1)$

Write the equation in vertex form of the parabola given ... <3 ea.>

13. vertex: $(-2, 1)$

point: $(2, 19)$ (x, y)

$y = a(x-h)^2 + k$

$a = \frac{9}{8}$ $h = -2, k = 1$

$19 = a(2-(-2))^2 + 1$

$19 = 16a + 1$

$\frac{18}{16} = \frac{16a}{16}$

$\frac{9}{8} = a$

$y = \frac{9}{8}(x+2)^2 + 1$

-more-

14. vertex: $(4, -3)$

point: $(6, -7)$

$h = 4, k = -3$

$a = -1$

$-7 = a(6-4)^2 - 3$

$-7 = 4a - 3$

$-4 = 4a$

$-1 = a$

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

Write the equation in standard form of the parabola passing through the points ... <4 ea.>

15. (0, 1)
(1, 2)
(2, 7)

	$ax^2 + bx + c = y$
(0, 1)	$c = 1$
(1, 2)	$a + b + c = 2$
(2, 7)	$4a + 2b + c = 7$

$\boxed{c=1}$ $a+b+1=2 \Rightarrow a+b=1 \rightarrow a+b=1$
 $4a+2b+1=7 \Rightarrow 4a+2b=6 \rightarrow 2a+b=3$

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

$\boxed{a=2}$

$a + b = 1$

$2 + b = 1$

$\boxed{b=-1}$

16. (1, 2)
(2, -3)
(3, -14)

	$ax^2 + bx + c = y$
(1, 2)	$a + b + c = 2$
(2, -3)	$4a + 2b + c = -3$
(3, -14)	$9a + 3b + c = -14$

$a+b+c=2, a=-3$
 $b=4$

$-3+4+c=2$

$1+c=2$

$\boxed{c=1}$

$y = -3x^2 + 4x + 1$

$2a = -6$

$\boxed{a=-3}$

$3a + b = -5$

$3(-3) + b = -5$

$-9 + b = -5$

$\boxed{b=4}$