

Ch. 7 Practice Test**Multiple Choice**

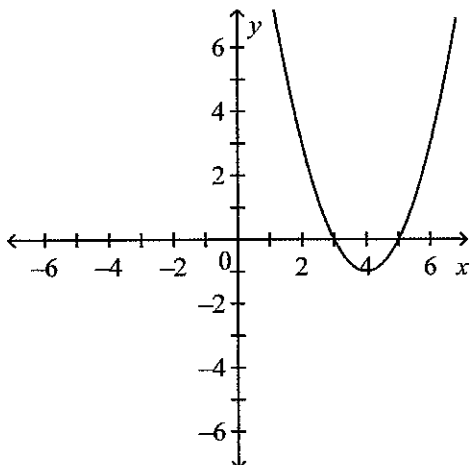
Identify the choice that best completes the statement or answers the question.

- _____ 1. Factor: $x^2 + 4x - 5$
- a. $(x-1)(x+5)$ c. $(x+1)(x-5)$
b. $(x-1)(x-5)$ d. $(x+1)(x+5)$
- _____ 2. Factor this polynomial: $6y^2 + 11y - 10$
- a. $(3y-2)(2y-5)$ c. $(3y-2)(2y+5)$
b. $(3y+2)(2y+5)$ d. $(3y+2)(2y-5)$
- _____ 3. Solve: $(x-1)(4x-5) = 0$
- a. $x = -1$ or $x = -\frac{5}{4}$ c. $x = -1$ or $x = \frac{5}{4}$
b. $x = 1$ or $x = \frac{5}{4}$ d. $x = 1$ or $x = -\frac{5}{4}$
- _____ 4. Solve this equation: $(x+2)(x+1) = 0$
- a. $x = 2$ or $x = 1$ c. $x = -2$ or $x = 1$
b. $x = 2$ or $x = -1$ d. $x = -2$ or $x = -1$
- _____ 5. What are the solutions to $0 = x^2 + 4x - 21$
- a. $x = -7$ or $x = 3$ c. $x = 7$ or $x = -3$
b. $x = -7$ or $x = -3$ d. $x = 7$ or $x = 3$
- _____ 6. What is the axis of symmetry of the points $(-3,4)$ and $(5,4)$?
- a. $x = 4$ c. $x = -3$
b. $x = 1$ d. $x = 2$
- _____ 7. Factor: $x^2 - 49$
- a. $x - 7$ c. $(x+7)(x-7)$
b. $(x+7)(x+7)$ d. $(x-7)^2$

8. Another name for x-intercepts is:

- a. roots
- b. solutions
- c. zeros
- d. all of the above

9. What are the coordinates of the vertex of this graph of a quadratic function?



- a. (1, 4)
- b. (-1, 4)
- c. (4, -1)
- d. (-4, -1)

10. Identify the y-intercept of the graph of this quadratic function: $y = x^2 - 5x + 26$

- a. 31
- b. 25
- c. 0
- d. 26

11. Identify the coordinates of the vertex and the y-intercept of the graph of this quadratic function:
 $y = 2(x + 2)^2 - 4$

- a. vertex: (-2, 4); y-intercept: 0
- b. vertex: (2, 4); y-intercept: 8
- c. vertex: (2, -4); y-intercept: 4
- d. vertex: (-2, -4); y-intercept: 4

12. When $a = 2$, $b = -3$, and $c = -5$, then the quadratic function $y = ax^2 + bx + c$ becomes

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

13. Which of the following shows correct substitution made for solving $5x^2 - 6x - 3 = 0$ using the quadratic formula?

- a. $x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(5)(-3)}}{2(5)}$
- b. $x = \frac{(-6) \pm \sqrt{(-6)^2 - 6(5)(-3)}}{2(5)}$
- c. $x = \frac{-(-6) \pm \sqrt{6^2 - 4(2)(3)}}{2(5)}$
- d. $x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(5)(-3)}}{2(4)}$

14. Solve using the quadratic formula.

$$x^2 + 7x - 9 = 0$$

a. $\frac{-7 \pm \sqrt{13}}{2}$

c. $\frac{-7 \pm \sqrt{85}}{9}$

b. $\frac{-7 \pm \sqrt{85}}{2}$

d. $\frac{-7 \pm \sqrt{36}}{2}$

15. Solve: $(4x + 1)(x + 5) = 0$

a. $x = \frac{1}{4}$ or $x = -5$

c. $x = \frac{1}{4}$ or $x = 5$

b. $x = -\frac{1}{4}$ or $x = -5$

d. $x = -\frac{1}{4}$ or $x = 5$

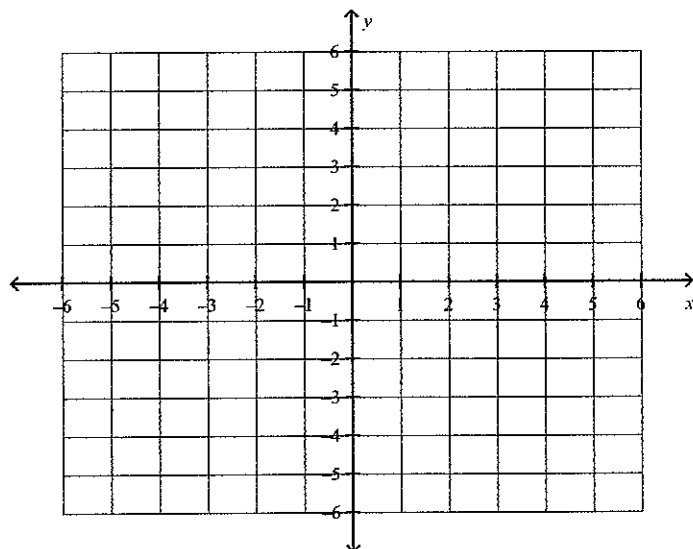
Short Answer

16. Graph the given function $y = -2(x - 3)^2 + 2$

Determine:

a) vertex: _____ b) axis of symmetry : _____ c) domain _____

d) range : _____ e) maximum/minimum value _____



x | y

17. Find the vertex of $f(x) = x^2 + 16x - 22$

18. What do you do if you want to find the x-intercept: _____

What do you do if you want to find the y-intercept: _____

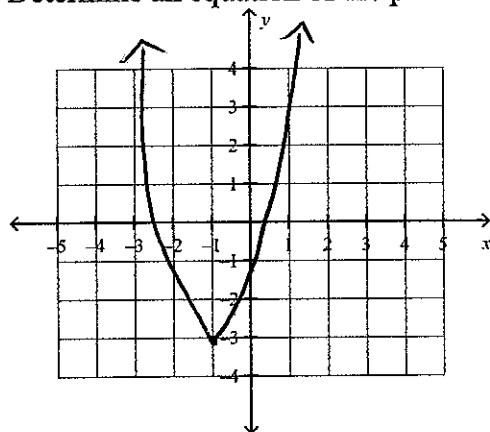
19. What are the x-intercepts of $y = x^2 + 6x + 8$

20. Open up or down??

a) $y = -9(x - 4)^2 - 5$

b) $-x^2 + 5x - 4$

21. Determine an equation of the parabola below. Answer in standard form.



22. Factor this polynomial:

a) $2y^2 + 3y - 9$

b) $x^2 - 5x - 36$

Problem

23. A rectangular yard needs to be fenced but one side is the river. You have 60 meters of fencing.

a) Determine the maximum area the yard can be.

b) What is the width AND the length?

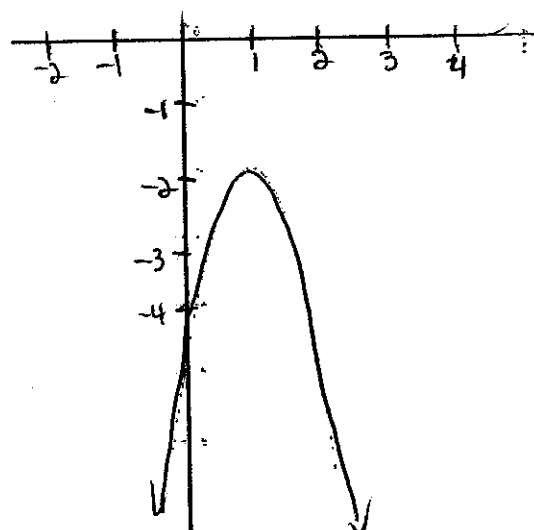
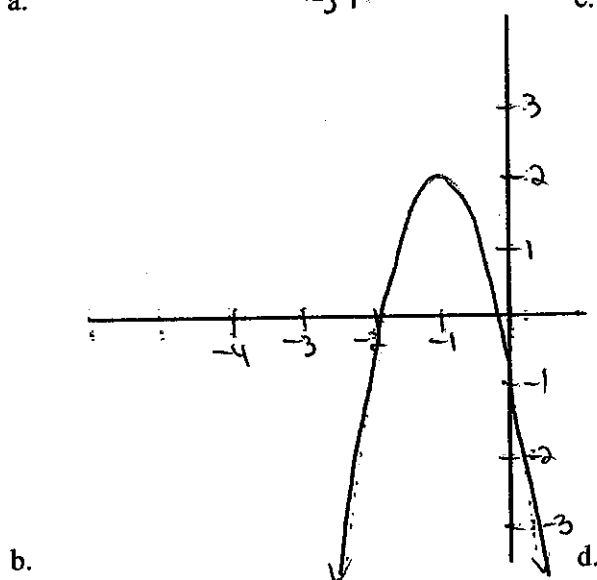
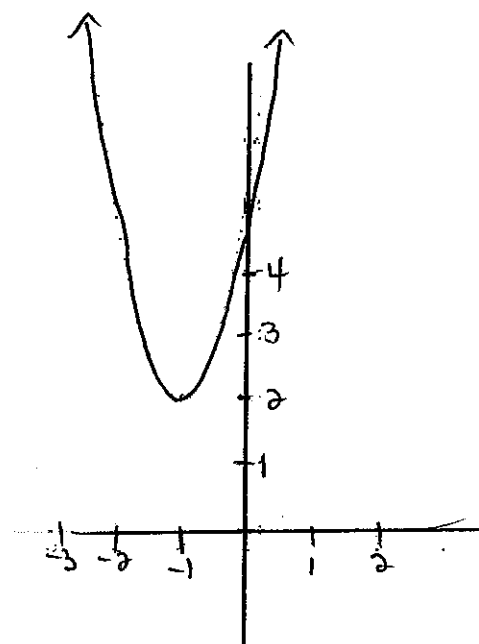
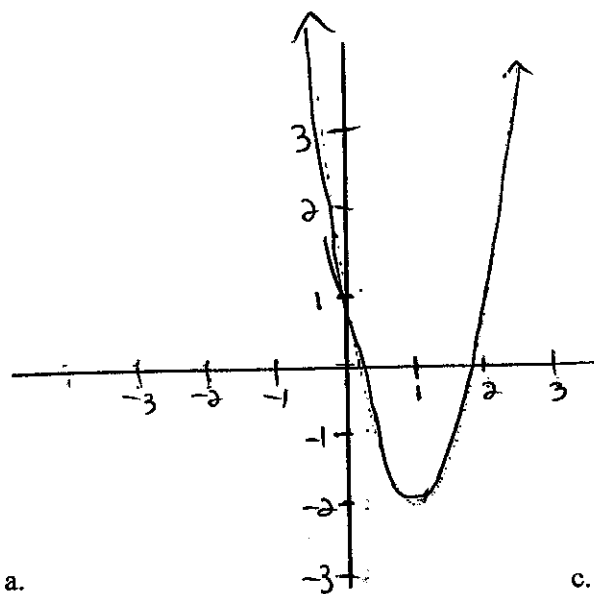
24. Julie stands on top of a cliff and throws a ball up in the air. The ball travels according to the equation:
 $h = -4t^2 + 16t + 45$. t = time in seconds, h = height in meters.

a) What height is Julie above ground when she throws the ball?

b) What is the ball's maximum height above the ground?

c) How long does it take the ball to reach its greatest height?

Matching



___ 25. $f(x) = -3(x+1)^2 + 2$

___ 26. $f(x) = 3(x-1)^2 - 2$

___ 27. $f(x) = -3(x-1)^2 - 2$

___ 28. $f(x) = 3(x+1)^2 + 2$

Ch. 7 Practice Test

Multiple Choice

Identify the choice that best completes the statement or answers the question.

A 1. Factor: $x^2 + 4x - 5$ $(x+5)(x-1)$

a. $(x-1)(x+5)$
b. $(x-1)(x-5)$

c. $(x+1)(x-5)$
d. $(x+1)(x+5)$

C 2. Factor this polynomial: $6y^2 + 11y - 10$

a. $(3y-2)(2y-5)$
b. $(3y+2)(2y+5)$

c. $(3y-2)(2y+5)$
d. $(3y+2)(2y-5)$

$y^2 + 11y - 60$
 $(y+15)(y-4)$ reduce $(y+\frac{5}{2})(y-\frac{2}{3})$
 $(2y+5)(3y-2)$

B 3. Solve: $(x-1)(4x-5) = 0$

a. $x = -1$ or $x = -\frac{5}{4}$

b. $x = 1$ or $x = \frac{5}{4}$

$x-1=0 \Rightarrow x=1$

$4x-5=0 \Rightarrow x=\frac{5}{4}$

c. $x = -1$ or $x = \frac{5}{4}$
d. $x = 1$ or $x = -\frac{5}{4}$

D 4. Solve this equation: $(x+2)(x+1) = 0$

a. $x = 2$ or $x = 1$
b. $x = 2$ or $x = -1$

c. $x = -2$ or $x = 1$
d. $x = -2$ or $x = -1$

$x = -2$ and -1

A 5. What are the solutions to $0 = x^2 + 4x - 21$

a. $x = -7$ or $x = 3$
b. $x = -7$ or $x = -3$

c. $x = 7$ or $x = -3$
d. $x = 7$ or $x = 3$

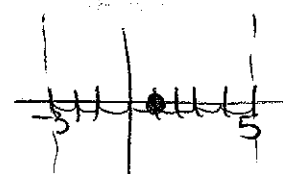
Factor first $(x+7)(x-3) = 0$
 $x = -7$, and 3

B 6. What is the axis of symmetry of the points $(-3, 4)$ and $(5, 4)$?

a. $x = 4$
b. $x = 1$

c. $x = -3$
d. $x = 2$

↓ middle



$\frac{-3+5}{2} = 1$

C 7. Factor: $x^2 - 49$ "difference of squares"

a. $x-7$

b. $(x+7)(x+7)$

c. $(x+7)(x-7)$

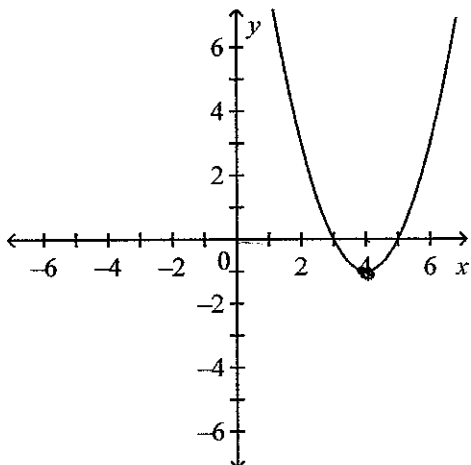
d. $(x-7)^2$

$(x+7)(x-7)$
↑ ↑
one plus one minus

8. Another name for x-intercepts is:

- a. roots
- b. solutions
- c. zeros
- d. all of the above

9. What are the coordinates of the vertex of this graph of a quadratic function?



(4, -1)

- a. (1, 4)
- b. (-1, 4)
- c. (4, -1)
- d. (-4, -1)

10. Identify the y-intercept of the graph of this quadratic function: $y = x^2 - 5x + 26$

make $x=0$

- a. 31
- b. 25
- c. 0
- d. 26

11. Identify the coordinates of the vertex and the y-intercept of the graph of this quadratic function:

$y = 2(x+2)^2 - 4$ $V(-2, -4)$ $\text{when } x=0 \quad y = 2(0+2)^2 - 4$

- a. vertex: (-2, 4); y-intercept: 0
- b. vertex: (2, 4); y-intercept: 8
- c. vertex: (2, -4); y-intercept: 4
- d. vertex: (-2, -4); y-intercept: 4

$8 - 4 = 4$

12. When $a = 2$, $b = -3$, and $c = -5$, then the quadratic function $y = ax^2 + bx + c$ becomes

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

13. Which of the following shows correct substitution made for solving $5x^2 - 6x - 3 = 0$ using the quadratic formula?

a. $x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(5)(-3)}}{2(5)}$

c. $x = \frac{-(-6) \pm \sqrt{6^2 - 4(2)(3)}}{2(5)}$

b. $x = \frac{(-6) \pm \sqrt{(-6)^2 - 6(5)(-3)}}{2(5)}$

d. $x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(5)(-3)}}{2(4)}$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

B 14. Solve using the quadratic formula.

$$x^2 + 7x - 9 = 0$$

$$a=1 \\ b=7 \\ c=-9$$

a. $\frac{-7 \pm \sqrt{13}}{2}$

b. $\frac{-7 \pm \sqrt{85}}{2}$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

c. $\frac{-7 \pm \sqrt{85}}{9}$

d. $\frac{-7 \pm \sqrt{36}}{2}$

$$\frac{-7 \pm \sqrt{7^2 - 4(1)(-9)}}{2(1)}$$

$$\frac{-7 \pm \sqrt{49 + 36}}{2}$$

$$\frac{-7 \pm \sqrt{85}}{2}$$

B 15. Solve: $(4x+1)(x+5) = 0$

a. $x = \frac{1}{4}$ or $x = -5$

b. $x = -\frac{1}{4}$ or $x = -5$

$$x = -5$$

$$x = -\frac{1}{4}$$

c. $x = \frac{1}{4}$ or $x = 5$

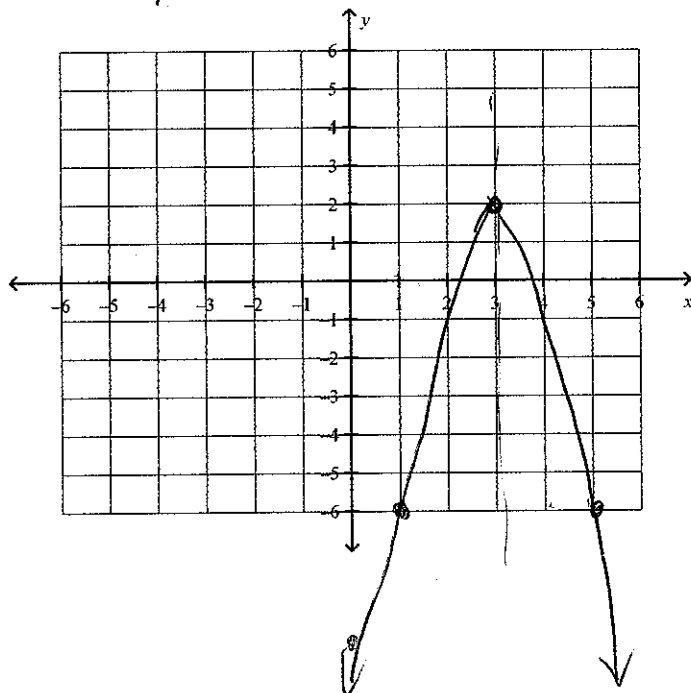
d. $x = -\frac{1}{4}$ or $x = 5$

Short Answer

16. Graph the given function $y = -2(x-3)^2 + 2$

Determine:

- a) vertex: $(3, 2)$ b) axis of symmetry: $x = 3$ c) domain: all real #'s
 d) range: $y \leq 2$ e) maximum/minimum value: 2



x	y
0	-16
1	-6

$$-2(0-3)^2 + 2 = -18 + 2 = -16$$

$$-2(1-3)^2 + 2 = -8 + 2 = -6$$

17. Find the vertex of $f(x) = x^2 + 16x - 22$

$$\left(\frac{-b}{2a}, c - \frac{b^2}{4a} \right) = \left(\frac{-16}{2}, -22 - \frac{16^2}{4} \right) \begin{matrix} 256 \\ -22 - 64 \end{matrix}$$

$$V(-8, -86)$$

18. What do you do if you want to find the x-intercept: make $y=0$

What do you do if you want to find the y-intercept: make $x=0$

19. What are the x-intercepts of $y = x^2 + 6x + 8$

make $y=0$

$$0 = x^2 + 6x + 8$$

factor $0 = (x+4)(x+2)$

$$x = -4 \text{ \& } -2$$

20. Open up or down??

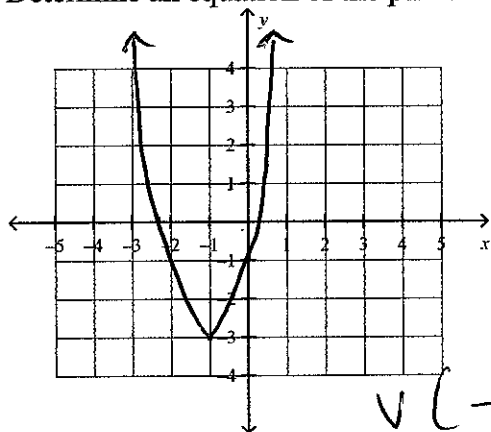
a) $y = -9(x-4)^2 - 5$

down

b) $y = x^2 + 5x - 4$

down

21. Determine an equation of the parabola below. Answer in standard form.



$V(-1, -3)$
 $P(0, -1)$
 $\begin{matrix} x \\ y \end{matrix}$

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

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

$$-1 = a(0+1)^2 - 3$$

$$-1 = 1a - 3$$

$$+3 \quad +3$$

$$+2 = a$$

$$\text{so } y = +2(x+1)^2 - 3$$

22. Factor this polynomial:

a) $2y^2 + 3y - 9$

bring back!
 $y^2 + 3y - 18$
 $(y+6)(y-3)$

$$(y+3)(2y-3)$$

b) $x^2 - 5x - 36$

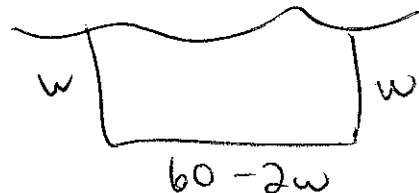
$$(x-9)(x+4)$$

Problem

23. A rectangular yard needs to be fenced but one side is the river. You have 60 meters of fencing.

a) Determine the maximum area the yard can be.

b) What is the width AND the length?



find vertex

$$w(60 - 2w)$$

$$60w - 2w^2$$

$$= -2w^2 + 60w + 0$$

$$a = -2$$

$$b = 60$$

$$c = 0$$

change
minus to
plus

$$\left(\frac{-b}{2a}, c - \frac{b^2}{4a} \right)$$

$$\left(\frac{+60}{2(-2)}, 0 + \frac{60^2}{4(-2)} \right) = (15, 450)$$

Answer
Area = 450 m²
w = 15 m
l = 30 m

24. Julie stands on top of a cliff and throws a ball up in the air. The ball travels according to the equation:
 $h = -4t^2 + 16t + 45$. t = time in seconds, h = height in meters.

a) What height is Julie above ground when she throws the ball?

t = 0 then h = 45 m

b) What is the ball's maximum height above the ground?

find vertex

$$\left(\frac{-b}{2a}, c - \frac{b^2}{4a} \right)$$

$$a = -4$$

$$b = 16$$

$$c = 45$$

$$\left(\frac{+16}{2(-4)}, 45 + \frac{16^2}{4(-4)} \right) = \left(2, 45 + \frac{256}{16} \right)$$

$$\left(2, 45 + 16 \right)$$

$$(2, 61)$$

c) How long does it take the ball to reach its greatest height?

61 m is max height

2 seconds

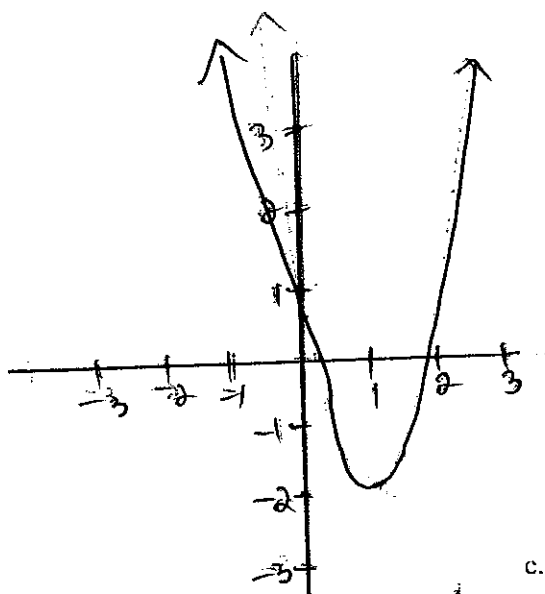
Answer

a) 45 m

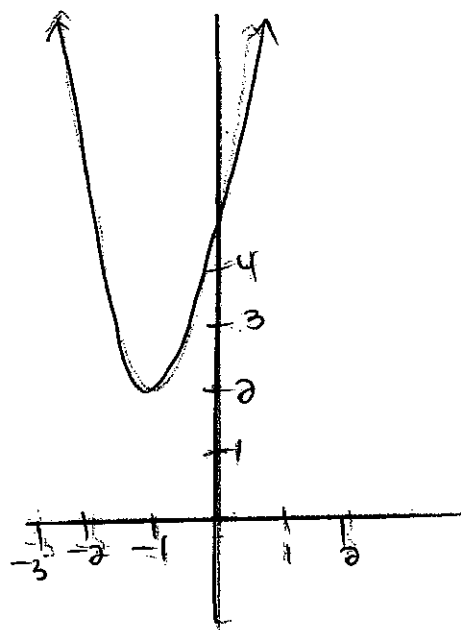
b) 61 m

c) 2 seconds

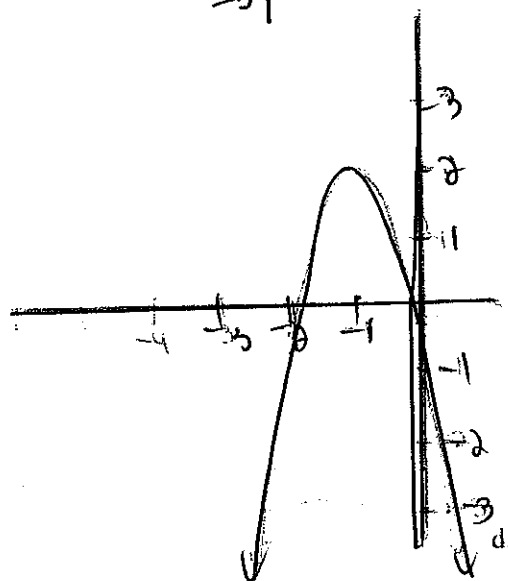
Matching



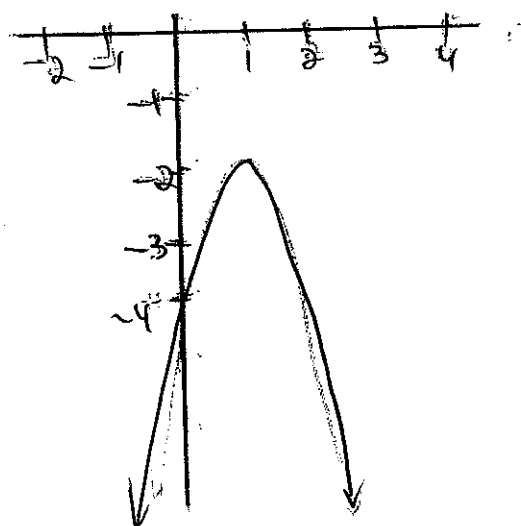
a.



c.



b.



d.

B 25. $f(x) = -3(x+1)^2 + 2$ $V(-1, 2)$ down

A 26. $f(x) = 3(x-1)^2 - 2$ $V(1, -2)$ up

D 27. $f(x) = -3(x-1)^2 - 2$ $V(1, -2)$ down

C 28. $f(x) = 3(x+1)^2 + 2$ $V(-1, 2)$ up