

1 Which of the following is the simplified form of the expression $(3 - 2i)(-7 + 4i)$?

A) $-21 + 18i$

C) $-21 - 8i^2$

B) $-4 + 2i$

D) $-13 + 26i$

$$(3-2i)(-7+4i) = -13+26i$$

FOIL

$$-21 + 12i + 14i - 8i^2$$

$$-21 + 26i + 8$$

$$-13 + 26i$$

2 What is a simplified form of the expression $-i + (7 - 5i) - 3(2 - 3i)$?

(or calculator)

A) $8 - 3i$

C) $8 - 9i$

B) $1 - 6i$

D) $1 + 3i$

$$-i + (7 - 5i) - 3(2 - 3i)$$

$$-i + 7 - 5i - 6 + 9i$$

$$7 - 6 - i - 5i + 9i$$

$$1 + 3i$$

3 What are the solutions to the equation $x^2 - 6x + 13 = 0$?

A) $-3 \pm 2i$

B) $3 \pm 2i$

C) $3 \pm 2i\sqrt{22}$

D) $3 \pm 8i$

Quadratic Formula

$$x = \frac{6 \pm \sqrt{36 - 52}}{2}$$

$$= \frac{6 \pm \sqrt{-16}}{2}$$

$$= \frac{6 \pm 4i}{2} = 3 \pm 2i$$

4 What are the solution(s) for x in the system $\begin{cases} x^2 + y^2 = 1 \\ y = 2x - 1 \end{cases}$?

A) $x = 1, 0$

B) $x = -\frac{4}{5}, 0$

C) $x = \frac{4}{5}, 0$

D) $x = 1, \frac{4}{5}$

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

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

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

$$5x^2 - 4x = 0$$

$$x(5x - 4) = 0$$

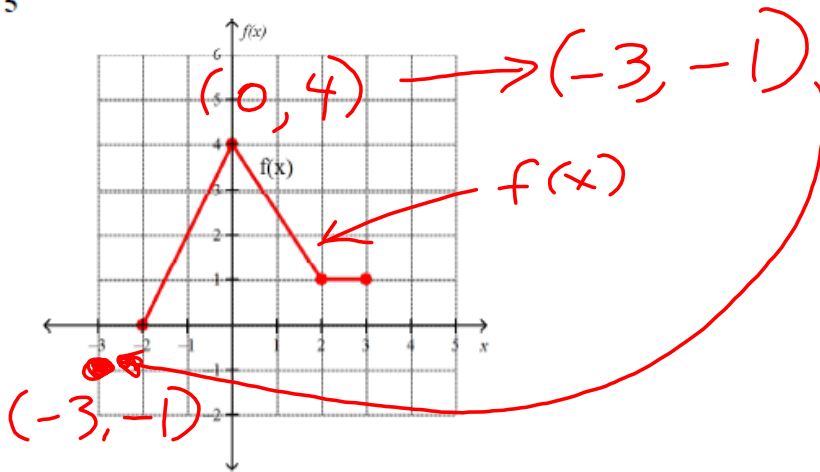
$$x = 0$$

$$5x - 4 = 0$$

$$5x = 4$$

$$x = \frac{4}{5}$$

5

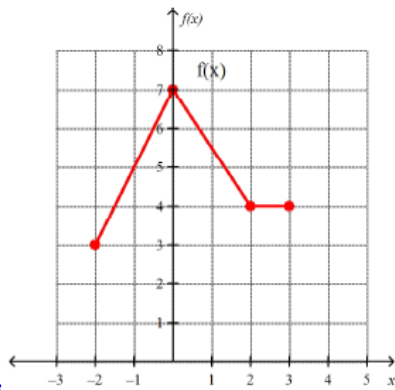


Given the graph of $f(x)$, which of the following is the graph of $f(x+3) - 5$?

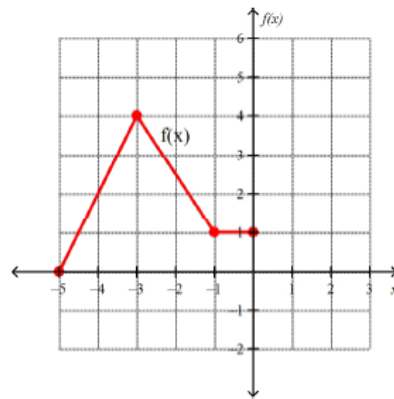
$$f(x+3) - 5$$

$(x+3)^2 - 5$
 vertex
 $(-3, -5)$
 left 3 down 5

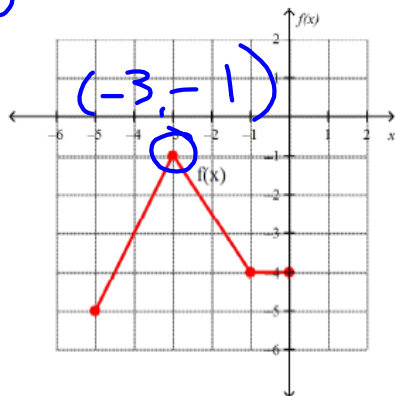
A)



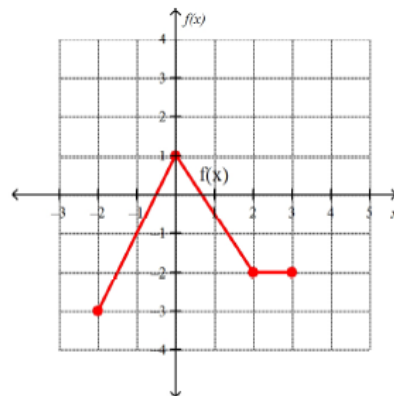
C)



B)



D)



Translation Practice

<u>fcn</u>	<u>left/right?</u>	<u>up/down</u>
$f(x+2)+1$	left 2	up 1
$g(x-5)$	right 5	—
$h(x)-13$	—	down 13

translations of $f(x)$:

① $f(x-3)+2$: right 3
up 2

② $f(x+7)-15$: left 7
down 15

6 Which of the following are the solutions to $(x+5)^2 = 36$?

A) $x = -1, 11$

C) $x = -5, 6$

B) $x = -11, 1$

D) $x = -23, 13$

$$(x+5)^2 = 36$$

$$x+5 = \pm 6$$

$$x = -5 \pm 6$$

$$x = -5 - 6 \quad x = -5 + 6$$

$$= -11 \quad = 1$$

7 Which equation is would have a range where $y \geq -12$?

A) $y = \frac{1}{3}x(x+4)$

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

B) $y = x^2 + 4x - 12$

$$a = \text{stretch/shrink/reflect}$$

C) $y = 3x^2 + 12x$

(h,k) vertex

D) $y = (x+2)^2 - 12$

vertex form gives
you:

domain

range

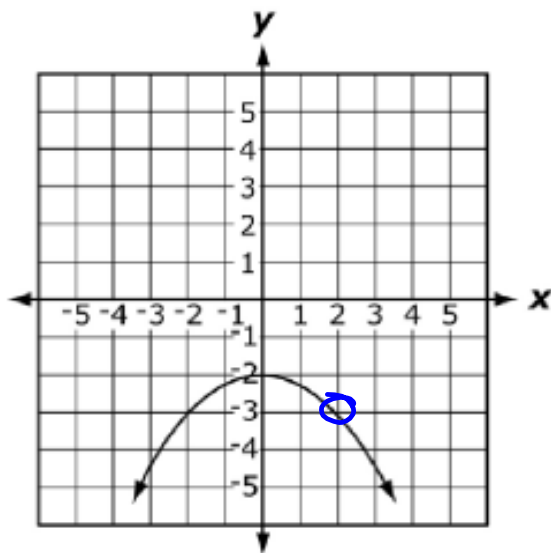
vertex

stretch/shrink/reflect
factor (a)

vertex form

$$k = -12$$

$$\text{range: } y \geq k$$



$x=2$ ✓
 (a) -3
 (b) -2
 (c) -18
 (d) 14

8

Which function represents this graph?

A) $f(x) = -\frac{1}{4}x^2 - 2$

C) $f(x) = -4x^2 - 2$

B) $f(x) = \frac{1}{4}x^2 - 2$ ↻ ↻

D) $f(x) = 4x^2 - 2$ ↻ ↻

9 A man throws a ball off the top of a building and records the height of the ball at different times in the table below.

time (seconds)	0	1	2
height (feet)	45	63	48

He finds that the height of the ball as a function of time can be modeled using the equation $-16.5t^2 + 34.5t + 45 = h(t)$. Using the model, approximate (to the nearest hundredths) when the ball hits the ground.

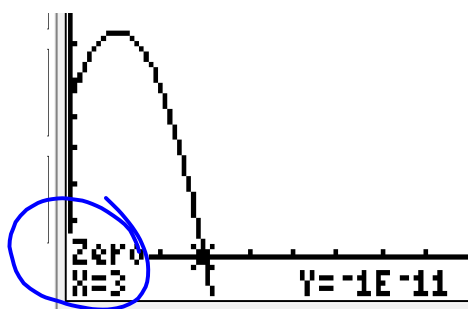
- Ⓐ 4.26 seconds
 Ⓑ 3.00 seconds

- Ⓒ 4.06 seconds
 Ⓓ 5.61 seconds

ground: $h = 0$

$$-16.5t^2 + 34.5t + 45 = 0$$

solve for t



- 10 A company is selling an item and determines that the profit from selling the item for a price of x dollars is given by the function below.

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

Which price will maximize the profit?

- A) \$4
B) \$12
C) \$16
D) \$20