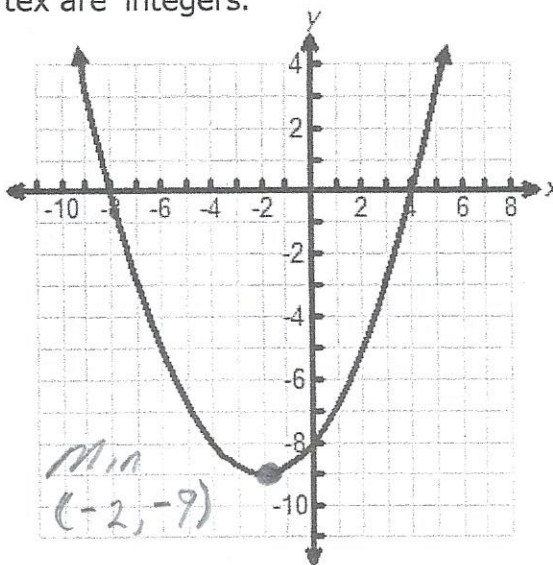


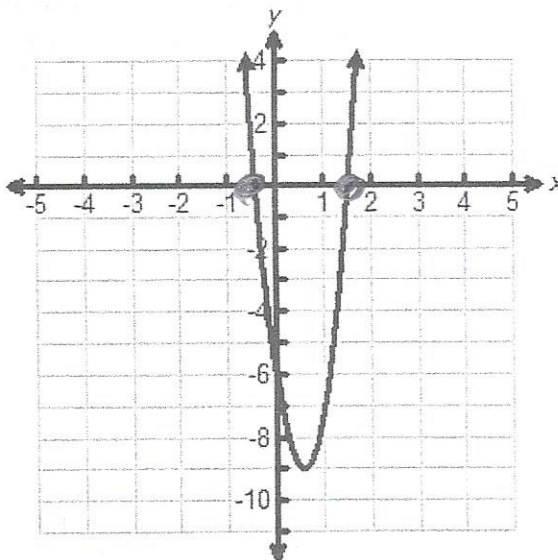
- 1 The graph of a quadratic function j is shown on the coordinate grid. The coordinates of the intercepts and the vertex are integers.



y-value
 What is the minimum value of j ? -9

- 2 A graph of $f(x) = 10x^2 - 11x - 6$ is shown on the coordinate grid.

• Graph
 • Trace
 • Zeros
 $x = -0.4$
 $x = 1.5$



What are the zeros of $f(x)$?

F $-\frac{2}{5}$ and $\frac{3}{2}$

$-\frac{2}{5} = -0.4$

G $\frac{11}{20}$ and -9

$\frac{3}{2} = 1.5$

H -6

J -9 and 4

- 3 The owner of a resale shop is analyzing the revenue for the year. Profit is modeled by the function $p(x) = x^2 - 14x + 485$, where $p(x)$ represents profit and x represents the number of items sold. How many items must he sell in order for his profit to be \$500?

X	Y
14	485
15	500
16	517

$p(x) = \text{profit} = \$500$
 $\rightarrow y = 500$
 • Graph
 • Table $\Rightarrow y = 500$

- 4 The firing of a Revolutionary War cannon is used to open the local Fourth of July festivities. The muzzle of the cannon barrel is 6 feet above ground level. The height of the cannon ball being fired from the Revolutionary War cannon as a function of elapsed time is modeled by the function $h(t) = -16t^2 + 75t + 6$, where $h(t)$ is the height of the cannon ball in feet, and t is the elapsed time since firing in seconds. Determine at approximately what elapsed time(s) the cannon ball will be at a height of 55 feet.

$x = 15$

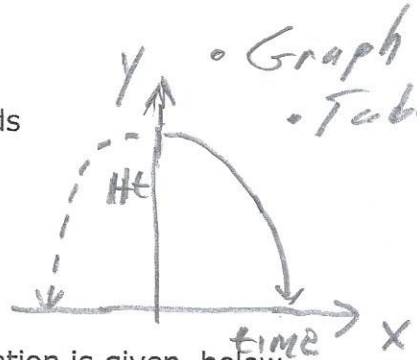
- F 0 seconds and 4.8 seconds
 G 0.8 seconds and 3.9 seconds
 H 1.0 seconds and 3.6 seconds
 J 3.9 seconds

• Graph
 • Table $\Rightarrow h(t) = y = 55$
 55 at 0 to 1
 55 at 3 to 4

X	Y
0	6
1	65
2	92
3	87
4	50

- 5 The height of an object is represented by the function $h(t) = 400 - 16t^2$, where 400 represents the initial height in feet from which the object is dropped, and t represents the elapsed time in seconds. How many seconds will it take for the object to hit the ground?

- A 5 seconds
 B 12.5 seconds
 C 20 seconds
 D 25 seconds



• Graph
 • Table $\Rightarrow h(t) = y = \phi$ Ground

x	y
0	400
1	384
2	336
3	256
4	144
5	ϕ

- 6 A quadratic equation is given below.

$$8x^2 = 3 - 10x$$

$\phi \leftarrow h(t) = \phi$

Which statement shows the factors used to determine the solutions and the solutions to the equation?

- F Factors: $(4x + 1)(2x - 3)$; Solutions: $x = \frac{1}{4}$, $x = \frac{3}{2}$
 G Factors: $(4x + 3)(2x - 1)$; Solutions: $x = \frac{3}{4}$, $x = \frac{1}{2}$
 H Factors: $(4x - 3)(2x + 1)$; Solutions: $x = \frac{3}{4}$, $x = -\frac{1}{2}$
 J Factors: $(4x - 1)(2x + 3)$; Solutions: $x = \frac{1}{4}$, $x = -\frac{3}{2}$

$$8x^2 = 3 - 10x$$

$$+10x \quad +10x$$

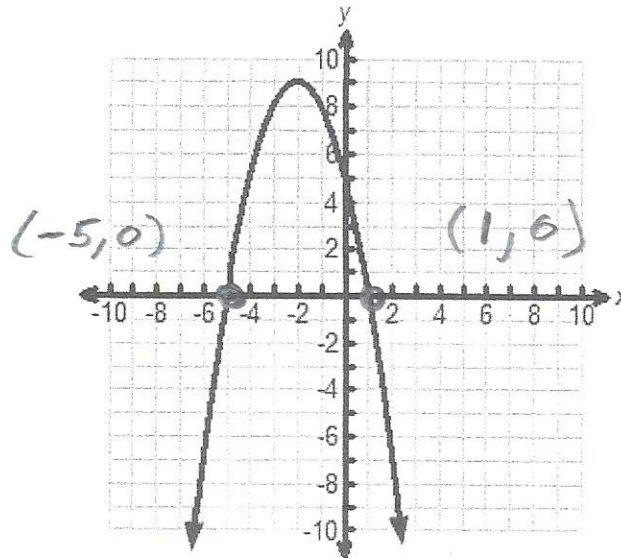
$$8x^2 + 10x = 3$$

$$-3 \quad -3$$

$$8x^2 + 10x - 3 = \phi$$

• Graph
 • Trace
 zeros $\Rightarrow x = .25$
 $x = -1.5$

7 The graph of a quadratic function is show below.



zeros, $y = 0$

What are the solutions to the quadratic function in terms of x ?

- A $x = -5$ and $x = 1$
- B $x = 5$ and $x = 1$
- C $x = -2$ and $x = 9$
- D $x = -1$ and $x = 5$

8 What are the solutions to $-18 = -2(x + 4)^2$?

- F $x = -4 \pm \sqrt{18}$
- G $x = -10$ and $x = 2$
- H No real solutions
- J $x = -1$ and $x = -7$

$$\begin{aligned} -18 &= -2(x+4)^2 \\ +18 & \quad +18 \\ \hline 0 &= 2(x+4)^2 + 18 \end{aligned}$$

• Graph

• Trace

$$x = -1$$

$$x = -7$$

- 9 A quadratic function is represented in the table.

x	y
-5	7
-4	0
-3	-5
-2	-8
-1	-9
0	-8
1	-5
2	0
3	7

$22105, y = \phi$

What are the solutions to the quadratic?

- A $x = 0$ and $x = -4$
 B $x = -8$
 C $x = -4$ and $x = 2$
 D No real solutions
- 10 What are the solutions to the equation $3x^2 + 15x = 18$?

F $x = -3$ and $x = -2$

G $x = -6$ and $x = 1$

H $x = 6$ and $x = 13$

J $x = 0$ and $x = 1$

$$\frac{-18 \quad -18}{3x^2 + 15x - 18 = \phi}$$

• Graph
 • Trace
 $x = 1$
 $x = -6$

- 11 What are the solutions to $2(x-7)^2 = 32$?

A $x = 7 \pm \sqrt{32}$

B $x = \pm \sqrt{65}$

C $x = 3$ and $x = 11$

D $x = -1$ and $x = 15$

$$\frac{-32 \quad -32}{2(x-7)^2 - 32 = \phi}$$

• Graph
 • Zoom Out $x = 3$
 • Trace $\rightarrow x = 11$