Chapter 10 Practice Test

**STUDY TIP**

### 10 CHAPTER TEST

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

4. \( y = x^2 + 6x + 8 \)

- \( A = 1 \)
- \( B = 6 \)
- \( C = 8 \)

- The vertex is \((-3, -1)\).
- The axis of symmetry is \(x = -3\).

### Approximate the zeros of the function to the nearest tenth.

8. \( f(x) = x^2 - 4x + 3 \)

- \( A = 1 \)
- \( B = -4 \)
- \( C = 3 \)

- The zeros are approximately \( x = 1.3 \) and \( x = 3 \).
Solve by taking roots:

10. \(3x^2 = 108\)
   \[
   \frac{3}{3} \sqrt{x^2} = \sqrt{36}
   \]
   \(x = \pm 6\)

11. \(-x^2 + 5x = 6\)
   \[
   \frac{-5x}{-1} \quad \frac{-51}{-1}
   \]
   \[
   x^2 = 4 \quad x \approx 2.71
   \]

Solve by completing the square:
(Tell what "c" is)

12. \(x^2 - 2x - 3 = 0\)
   \[
   \frac{3}{3} \quad \frac{3}{3}
   \]
   \[
   x^2 - 2x + 1 = 3 + 1
   \]
   \[
   (x - 1)^2 = 4
   \]
   \[
   x = 1 \pm 2
   \]
   \[
   x = 1 + 2 \quad x = 3
   \]
   \[
   x = 1 - 2 \quad x = -1
   \]

Solve with quadratic formula - Tell what discriminant is

13. \(-2x^2 + 6x + 9 = 0\)
   \[
   a = -2 \quad b = 6 \quad c = 9
   \]
   \[
   x = \frac{-6 \pm \sqrt{36 - 4(-2)(9)}}{2(-2)}
   \]
   \[
   x = \frac{-6 \pm \sqrt{108}}{-4}
   \]
   \[
   x = -6 \pm \sqrt{108} \quad 2 \text{ SOL}
   \]

14. \(2x^2 - 13x - 1 = -7x^2 + 6\)
   \[
   +7x - 6 \quad +7x - 6
   \]
   \[
   2x^2 - 5x - 7 = 0
   \]
   \[
   a = 2 \quad b = -5
   \]
   \[
   x = \frac{-5 \pm \sqrt{25 - 4(2)(-7)}}{2(2)}
   \]
   \[
   x = \frac{5 \pm \sqrt{81}}{4}
   \]
   \[
   x = \frac{5 + 9}{4} \quad x = \frac{5 - 9}{4}
   \]
   \[
   x = 3.5 \quad x = -1
   \]
CH10 REVIEW (PRACTICE TEST)

WORD PROBLEM: PAGE 675 #48

48. A football is kicked from a starting point 2.5 feet above ground level with an initial velocity of 45 ft/sec.

\[ V = 45 \text{ ft/sec} \]

\[ H = 5.5 \text{ ft} \]

\[ S = 2.5 \text{ ft} \]

(a) Equation to describe this model (function):

\[ H = -16T^2 + 45T + 2.5 \]

(b) Amount of time in the air:

\[ 5.5 = -16T^2 + 45T + 2.5 \]

\[ -5.5 \]

\[ -55 \]

\[ 0 = -16T^2 + 45T - 3 \]

Put in std form:

\[ a = -16 \]

\[ b = 45 \]

\[ c = -3 \]

\[ x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \]

\[ x = \frac{45 \pm \sqrt{1833}}{32} \]

\[ x = \frac{45 + \sqrt{1833}}{32}, \quad x = \frac{45 - \sqrt{1833}}{32} \]

\[ x = 0.068 \text{ sec}, \quad x = 2.74 \text{ sec} \]

This is on the way up.

Answer:

The ball was in the air about 2.77 seconds when caught.
A juggler throws a ball from an initial height of 4ft with an initial velocity of 30ft/sec. If the juggler misses the ball, after how many seconds will it hit the ground?

\[ H = -16T^2 + VT + S \]

\[ 0 = -16T^2 + 30T + 4 \]

\[ 0 = -2(8T^2 + 15T + 2) \]

\[ 0 = -2(8T + 1)(T - 2) \]

\[ 8T + 1 = 0 \quad T - 2 = 0 \]

\[ T = -\frac{1}{8} \quad T = 2 \]

The ball lands on the ground in 2 seconds.