

Factor completely.

1.  $x^2 - 25$

2.  $x^2 - y^2$

3.  $5x^2 - 45$

4.  $x^2 + 8x + 16$

5.  $16x^2 + 24x + 9$

6.  $81 - 18x + x^2$

7.  $x^2 + 6x + 8$

8.  $x^3 - x^2 - 6x$

9.  $2x^2 - 3x - 14$

10.  $8x^2 - 10x + 3$

11.  $x^3 - x^2 - 8x + 8$

12.  $9x^3 - 18x^2 - 4x + 8$

Solve each equation.

13.  $x^2 - 100 = 0$

14.  $x^2 + 7x + 12 = 0$

15.  $2x^2 - 5x - 3 = 0$

16.  $5x^2 - 17x + 6 = 0$

17.  $3x^2 - 75 = 0$

18.  $7x^2 + 14x + 7 = 0$

Use the projectile motion formula to answer the following questions.

$$h = -16t^2 + vt + s$$

19. A football is kicked from the ground with an initial velocity of 24 feet/second. How long will it take for the ball to reach a height of 9 feet?

20. A rock is dropped from a height of 144 feet. How long will it take to reach the ground?

## Answers

1.  $(x + 5)(x - 5)$
2.  $(x + y)(x - y)$
3.  $5(x + 3)(x - 3)$
4.  $(x + 4)^2$
5.  $(4x + 3)^2$
6.  $(9 - x)^2$
7.  $(x + 4)(x + 2)$
8.  $x(x - 3)(x + 2)$
9.  $(2x - 7)(x + 2)$
10.  $(4x - 3)(2x - 1)$
11.  $(x^2 - 8)(x - 1)$
12.  $(3x + 2)(3x - 2)(x - 2)$
13.  $x = 10$  or  $-10$
14.  $x = -3$  or  $-4$
15.  $x = 3$  or  $-\frac{1}{2}$
16.  $x = 3$  or  $\frac{2}{5}$
17.  $x = 5$  or  $-5$
18.  $x = -1$
19.  $x = \frac{3}{4}$  of a second
20. 3 seconds