

Factor

1. $49x^2 - 84x + 36$

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

Simplify the radicals

3. $\sqrt{64}$

4. $\sqrt{24}$

5. $\sqrt{80}$

Solve each equation by taking the square root. Keep your answer in simplified radical form.

6. $7x^2 - 32 = 45$

7. $2x^2 - 6 = 122$

8. $(x - 12)^2 = 54$

9. $(x + 15)^2 = 81$

10. $4(x + 10)^2 = 24$

11. $3(x - 9)^2 = 192$

Word problem

12. A zookeeper is buying a fence to enclose a pen at the zoo. The pen is in the shape of an isosceles right triangle. There is already fencing along the hypotenuse, which borders a path. The area of the pen is 4500 square feet. The zookeeper can buy the fence in whole feet only. How much fencing should she buy?

13. To study how high a ball bounces, students drop the ball from various heights. Use the projectile motion formula ($h = -16t^2 + vt + s$). If the ball is dropped from a height of 8 feet, find the elapsed time until the ball hits the floor. Round to the nearest hundredth.