1.3, 1.4, 1.5 Classwork / Homework

Simplify.

1. \( \sqrt{\frac{13}{28}} \)
2. \( \frac{2}{1 - \sqrt{3}} \)
3. \( \frac{\sqrt{2}}{4 + \sqrt{5}} \)
4. \( \frac{2 + \sqrt{3}}{-1 - \sqrt{5}} \)

Solve using \textbf{factoring} or \textbf{square roots} for #5-15.

5. \( 5x^2 = 405 \)
6. \( 4x^2 - 20x = -25 \)
7. \( 14s^2 - 21s = 0 \)
8. \( \frac{x^2}{25} - 6 = -2 \)
9. \( a^2 + 10 = 7a \)
10. \( 4(x - 1)^2 = 8 \)
11. \( n^2 - 25 = 0 \)
12. \( r^2 + 2r = 80 \)
13. \( 21b^2 - 77b + 5 = 33 \)
14. \( -3w^2 + 213 = 0 \)
15. \( \frac{1}{2}(t + 1)^2 - 6 = 8 \)

Word Problems

16. A coyote is standing on a cliff 254 feet above a roadrunner. If the coyote drops a boulder from the cliff, how much time does the roadrunner have to move out of its way?

17. You have a rectangular vegetable garden that measures 42 feet by 8 feet. You want to double the area of the garden by expanding the length and width by the same amount. What is the new length and width of the garden?

18. The pressure \( P \) (in pounds per square foot) from wind blowing at \( s \) miles per hour is given by \( P = .00256s^2 \). What wind speed produces a pressure of 30 lb/ft\(^2\)?

19. You have made a rectangular quilt that is 5 feet by 4 feet. You want to use the remaining 10 square feet of fabric to add a decorative border of uniform width to the quilt. What should the width of the quilt’s border be?