**Quiz 1**

For use after Lessons 6.1–6.2

**Evaluate the expression without using a calculator.**

1. \(8^{2/3}\)
2. \(81^{-3/2}\)
3. \(-125^{4/3}\)
4. \((-32)^{3/5}\)

**Solve the equation. Round your answer to two decimal places when appropriate.**

5. \(x^5 = 25\)
6. \(x^3 = -21\)
7. \(x^4 + 11 = 29\)
8. \((x + 4)^3 = -33\)

**Simplify the expression. Assume all variables are positive.**

9. \(\sqrt[3]{27} \cdot \sqrt[3]{64}\)
10. \((\sqrt{6} \cdot \sqrt[3]{6})^6\)
11. \((x^8 y^4)^{1/10} + 3(x^{1/5} y^{1/10})^4\)
12. \(\frac{2\sqrt{9} + 7\sqrt{9}}{\sqrt{9}}\)
13. \(\frac{6\sqrt{x^2 \sqrt{x^2}}}{81\sqrt{x^{16}}}\)
14. \(y^3 \sqrt[3]{32x^4} - 7\sqrt[5]{x^4 y^{15}}\)

15. Find a radical expression for the perimeter of the shaded triangle. Simplify the expression.
Let \( f(x) = 5x^3 - 2x \) and \( g(x) = 3x^3 \). Perform the indicated operation and state the domain.

1. \( f(x) + g(x) \)
2. \( f(x) - g(x) \)
3. \( f(x) \cdot g(x) \)
4. \( \frac{f(x)}{g(x)} \)
5. \( f(g(x)) \)
6. \( g(f(x)) \)

Verify that \( f \) and \( g \) are inverse functions.

7. \( f(x) = x - 7, \quad g(x) = x + 7 \)
8. \( f(x) = \frac{2}{5}x + \frac{1}{3}, \quad g(x) = \frac{5}{2}x - \frac{5}{6} \)
9. \( f(x) = 6x^3, \quad g(x) = \sqrt[3]{x} \)

Find the inverse of the function.

10. \( f(x) = 3x + 10 \)
11. \( f(x) = -\frac{3}{8}x^7 \)
12. \( f(x) = x^2 - 9, \quad x \geq -9 \)

13. The cost (in dollars) of \( g \) gallons of gasoline can be modeled by 
\( C(g) = 2.25g \). The amount of gasoline used by an SUV can be modeled by 
\( g(d) = 0.025d^{1.24} \) where \( d \) is the distance (in miles). 
Find \( C(g(d)) \). Evaluate \( C(g(500)) \). What does \( C(g(500)) \) represent?