

Palomar College Math Placement Test Study Guide Intermediate Algebra

Topic 10: Radicals

Assume all radicals represent real numbers.

1. Simplify: $\sqrt{60}\sqrt{5}$

2. Simplify: $\sqrt{8x^{20}y^5z^9}$

3. Simplify: $\sqrt[3]{-27x^9y^{12}}$

4. Simplify: $(2 + \sqrt{3})^2$

5. Simplify: $\sqrt{\frac{75x^5y^4}{12x^2y^{10}}}$

6. Simplify: $\sqrt{20ab^3}\sqrt{4a^5b^2}$

7. Simplify: $\frac{\sqrt[3]{2x^7y}}{\sqrt[3]{16x^2y^4}}$

8. Simplify: $2b\sqrt[4]{32b^2} + \sqrt[4]{512b^6}$

9. Simplify: $4x\sqrt{18x^2} - 5\sqrt{32x^4} + 2\sqrt{162}$

10. Rationalize the denominator: $\frac{2}{\sqrt{3}}$

11. Rationalize the denominator: $\frac{1}{2 + \sqrt{3}}$

12. Rationalize the denominator: $\frac{\sqrt{x}}{\sqrt{x} + 2\sqrt{y}}$

13. Solve: $\sqrt[3]{4x - 7} + 8 = 11$

14. Solve: $\sqrt{2x + 13} = x - 1$

15. Find the length of the hypotenuse of a right triangle whose legs are 5 inches and 10 inches.

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Answers:

1. $10\sqrt{3}$
2. $2x^{10}y^2z^4\sqrt{yz}$
3. $-3x^3y^4$
4. $7 + 4\sqrt{3}$
5. $\frac{5x\sqrt{x}}{2y^3}$
6. $4a^3b^2\sqrt{5b}$
7. $\frac{x^3\sqrt{x^2}}{2y}$
8. $8b^4\sqrt{2b^2}$
9. $-8x^2\sqrt{2} + 18\sqrt{2}$
10. $\frac{2\sqrt{3}}{3}$
11. $2 - \sqrt{3}$
12. $\frac{x - 2\sqrt{xy}}{x - 4y}$
13. $x = 17/2$
14. $x = 6$
15. The hypotenuse is $5\sqrt{5}$ inches.