

Name Answer Key

6.1-6.2 CP Algebra 2 Quiz

1. Find all the real square roots of each number.

- a) 0.0049
 $\pm .07$
- b) $\frac{64}{169}$
 $\pm \frac{8}{13}$

2. Find all the real cube roots of each number.

- a) -64
-4
- b) 0.125
.5

3. Find all the real fourth roots of each number.

- a) -16
not possible
- b) $\frac{10,000}{81}$
 $\pm \frac{10}{3}$

4. Find each real root.

- a) $\sqrt{36}$
6
- b) $\sqrt[3]{-64}$
-4

5. Simplify each radical expression.

- a) $\sqrt{16x^2y^4}$
 $4xy^2$
- b) $\sqrt[3]{32y^{10}}$
 $2y^2$

6. Boat builders share an old rule of thumb for sailboats. The maximum speed K in knots is 1.35 times the square root of the length L in feet of the boat's waterline.

a) A customer is planning to order a sailboat with a maximum speed of 12 knots. How long should the waterline be?

$$K = 1.35\sqrt{L} \quad (8.8)^2 = (\sqrt{L})^2$$

$$\frac{12}{1.35} = \frac{1.35\sqrt{L}}{1.35} \quad L = 79.01 \text{ feet}$$

b) How much longer would the waterline have to be to achieve a maximum speed of 15 knots?

$$\frac{15}{1.35} = \frac{1.35\sqrt{L}}{1.35} \quad (11.1)^2 = (\sqrt{L})^2 \quad \frac{123.46}{79.01}$$

$$L = 123.46 \quad 44.45 \text{ feet}$$

7. Simplify each radical expression.

a) $\sqrt[3]{\frac{8}{216}} \quad \frac{2}{6} = \frac{1}{3}$

b) $\sqrt[4]{16c^{12}} \quad 2c^3$

8. Multiply, if possible. Then simplify.

a) $\sqrt{3} \cdot \sqrt{27} = \sqrt{81} = 9$

b) $\sqrt[3]{-16} \cdot \sqrt[3]{4} = \sqrt[3]{-64} = -4$

9. Simplify. Assume that all variables are positive.

a) $\sqrt{18k^6} \quad 3k^3\sqrt{2}$

b) $\sqrt[4]{625u^5v^8} \quad 5uv^2\sqrt[4]{u}$

10. Multiply and simplify.

a) $\sqrt[3]{50x^2z} \cdot \sqrt[3]{15yz} \quad 5y^2z^2\sqrt[3]{6xz}$

b) $7\sqrt{3y^2} \cdot 2\sqrt{6x^3y} \quad 14\sqrt{18x^3y^3} = 42xy\sqrt{2xy}$

11. Divide and simplify.

a) $\frac{\sqrt{54x^5y^3}}{\sqrt{2x^2y}} = \sqrt[3]{\frac{27x^3y^2}{1}} = 3xy\sqrt{3x}$

b) $\frac{\sqrt[3]{108y^9}}{\sqrt[3]{4y}} = \sqrt[3]{\frac{27y^8}{4y}} = 3y^2\sqrt[3]{y^2}$

12. The volume of a right circular cone is $V = \frac{1}{3}\pi r^2 h$. Solve for r .

$$3(V = \frac{1}{3}\pi r^2 h)$$

$$\frac{3V}{\pi h} = \frac{\pi r^2 h}{\pi h}$$

$$\sqrt{\frac{3V}{\pi h}} = r$$