

## Radicals Retake Qualifier

Name:

### Simplifying Radicals

Find the real-number root.

1.  $\sqrt[3]{-\frac{64}{216}} =$

What is the simplest form of the radical expression?

2.  $\sqrt[3]{216x^{21}y^6}$

What is the simplest form of the product?

3.  $\sqrt{80x^7y^6} \cdot \sqrt{3x^4y^2}$

What is the simplest form of the quotient?

4.  $\sqrt{\frac{216a^{15}}{3a}}$

What is the simplest form of the sum?

5.  $3^4\sqrt{2xy} + 19^4\sqrt{2xy}$

6. A garden has a width of  $\sqrt{12}$  ft. and a length of  $3\sqrt{12}$  ft. What is the perimeter of the garden in simplest radical form?

Find the product.

7.  $(12 - \sqrt{3})(2 + \sqrt{3})$

8.  $(3 + 2\sqrt{5})(3 - 2\sqrt{5})$

Rationalize the denominator:

9.  $\frac{\sqrt{5}-\sqrt{7}}{\sqrt{5}+\sqrt{7}}$

Simplify.

10.  $6^{\frac{1}{5}} \cdot 6^{\frac{1}{5}}$

11. Write the exponential expression  $5a^{\frac{3}{4}}$  in radical form.

What is the simplest form of the radical expression?

$$12. \sqrt[3]{54} - \sqrt[3]{16} + \sqrt[3]{2}$$

What is the simplest form of the expression?

$$13. \sqrt[3]{250a^{13}b^{11}}$$

### Solving Radical Equations

Find the solution.

$$1. \sqrt{4x + 3} + 2 = 5$$

$$2. -5 + \sqrt{x - 3} = 2$$

$$3. (x - 3)^{\frac{3}{4}} = 8$$

$$4. \sqrt{x + 7} = x - 5$$

5. Rewrite the function  $y = \sqrt{16x + 32} - 5$  to make it easy to graph using transformations of its parent function. Describe the graph.

6. The formula for the volume of a cone is  $V = \frac{1}{3}\pi r^2 h$ . Find the radius, to the nearest hundredth, of a cone with a height of 5 in. and a volume of  $24 \text{ in.}^3$ .

### Graphing Radical Functions

1. Sketch the graph of  $y = \sqrt{x - 6}$

2. Rewrite the function  $y = \sqrt{16x + 32} - 5$  to make it easy to graph using transformations of its parent function. Describe the graph.