# Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_\_\_\_

## **Unit 15 Review**

1. Simplify the following radical expressions using the root chart for help.

|  |  |
| --- | --- |
| 1. $\sqrt{108x^{8}}=$\_\_\_\_\_\_\_\_\_\_\_
 | 1. $\sqrt[3]{864x^{7}y^{8}}=$\_\_\_\_\_\_\_\_\_\_\_
 |
| 1. $\sqrt[4]{112x^{7}y^{4}}=$\_\_\_\_\_\_\_\_\_\_\_
 | 1. $\sqrt[5]{3072x^{8}}=$\_\_\_\_\_\_\_\_\_\_\_
 |
| 1. $\sqrt[6]{3645x^{2}y^{7}}=$\_\_\_\_\_\_\_\_\_\_\_
 | 1. $\sqrt[7]{640x^{5}}=$\_\_\_\_\_\_\_\_\_\_\_
 |
| 1. $\sqrt[8]{19683x^{24}y^{12}}$\_\_\_\_\_\_\_\_\_\_\_
 | 1. $\sqrt[9]{19683x^{15}}$\_\_\_\_\_\_\_\_\_\_
 |
| 1. $\sqrt[10]{2048x^{20}y^{15}}$\_\_\_\_\_\_\_\_\_\_
 | 1. $\sqrt{64x^{5}y^{4}}$\_\_\_\_\_\_\_\_\_\_
 |

1. Rewrite each expression using rational (fractional) exponents.

|  |  |
| --- | --- |
| 1. $\sqrt[6]{82}=$\_\_\_\_\_\_\_\_\_\_\_\_
 | 1. $\left(\sqrt[9]{7}\right)^{5}=$ \_\_\_\_\_\_\_\_\_\_\_
 |
| 1. $\sqrt[5]{3^{3}}=$ \_\_\_\_\_\_\_\_\_\_\_
 | 1. $\sqrt[6]{8^{7}}=$ \_\_\_\_\_\_\_\_\_\_\_
 |

1. Rewrite each expression using radical notation.

|  |  |
| --- | --- |
| 1. $19^{\frac{1}{3}}=$ \_\_\_\_\_\_\_\_\_\_\_
 | 1. $21^{\frac{5}{2}}=$ \_\_\_\_\_\_\_\_\_\_\_
 |
| 1. $6^{\frac{4}{5}}=$ \_\_\_\_\_\_\_\_\_\_\_
 | 1. $12^{\frac{3}{7}}=$ \_\_\_\_\_\_\_\_\_\_\_
 |

1. Evaluate each expression by rewriting in radical notation.

|  |  |
| --- | --- |
| 1. $8^{\frac{4}{3}}=$ \_\_\_\_\_\_\_\_\_\_\_
 | 1. $36^{\frac{3}{2}}=$ \_\_\_\_\_\_\_\_\_\_\_
 |
| 1. $81^{\frac{3}{4}}=$ \_\_\_\_\_\_\_\_\_\_\_
 | 1. $64^{\frac{2}{3}}=$ \_\_\_\_\_\_\_\_\_\_\_
 |

1. Solve the following equations.

|  |  |
| --- | --- |
| 1. $x^{\frac{2}{3}}-4=21$
 | 1. $2x^{\frac{5}{3}}=64$
 |
| 1. $\left(3x\right)^{\frac{1}{4}}-2=1$
 | 1. $2\left(x+1\right)^{\frac{3}{2}}=54$
 |
| 1. $\sqrt{2x+3}=3$
 | 1. $\sqrt{x}+3=4$
 |
| 1. $2\sqrt{2x}=8$
 |  1. $3\sqrt{x+4}-5=10$
 |

# Review

Find the following for $x^{2}+2x-3=0$.

|  |  |
| --- | --- |
| 1. Vertex: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |  |
| 1. Axis of Symmetry: \_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| 1. X-Intercepts: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |

**ANSWERS**

$$3x\sqrt[9]{x^{6}}$$

$$6x^{2}y^{2}\sqrt[3]{4xy^{2}}$$

$$\left(-3, 0\right) \& \left(1, 0\right)$$

$$\sqrt[7]{12^{3}} or \left(\sqrt[7]{12}\right)^{3}$$

$$7^{\frac{5}{9}}$$

$$x=21$$

$$3^{\frac{3}{5}}$$

$$3y\sqrt[6]{5x^{2}y}$$

$$216$$

$$x=-1$$

$$\left(-1, -4\right)$$

$$x=1$$

$$x=3$$

$$x=8$$

$$x=27$$

$$x=8$$

$$x=125$$

$$16$$

$$27$$

$$16$$

$$\sqrt[5]{6^{4}} or \left(\sqrt[5]{6}\right)^{4}$$

$$\sqrt{21^{5}} or \left(\sqrt{21}\right)^{5}$$

$$\sqrt[3]{19}$$

$$8^{\frac{7}{6}}$$

$$82^{\frac{1}{6}}$$

$$8x^{2}y^{2}\sqrt{x}$$

$$2x^{2}y\sqrt[10]{2y^{5}}$$

$$3x^{3}y\sqrt[8]{3y^{4}}$$

$$4x\sqrt[5]{3x^{3}}$$

$$2\sqrt[7]{5x^{5}}$$

$$2xy\sqrt[4]{7x^{3}}$$

$$x=8$$

$$6x^{4}\sqrt{3}$$