

M2H Unit 5 Test Review

A radical expression can be written as a rational exponent, and vice versa.

$$\sqrt[3]{x} = \quad y^{\frac{4}{5}} = \quad 2x^{\frac{2}{3}} =$$

1. Simplify:

a) $\sqrt[3]{x^2yz}$

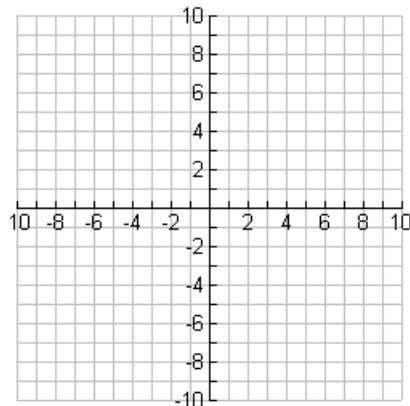
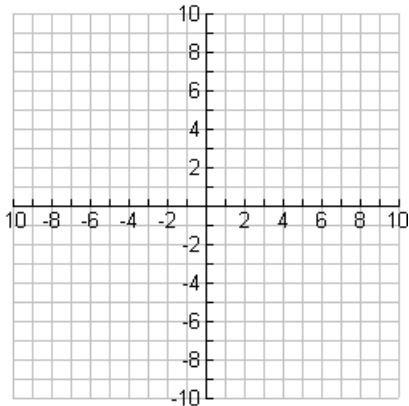
b) $\sqrt[4]{x^5y^{10}z}$

c) $\sqrt{75a^{11}b^4c^7}$

2. Graph. State the transformations in order. State the Domain and Range.

a) $y = \sqrt{x-3} + 2$

b) $y = \sqrt{4x+8}$



3. Working backwards: Writing the equation when given a translation.

a) The parent function $y = \sqrt{x}$ is translated 2 units to the left and one unit down.

b) The parent function $y = \sqrt{x}$ is translated 3 units to the right.

4. Solve each radical equation.

c) $\sqrt{x+8} + 4 = x$

d) $\sqrt{3x-1} = \sqrt{2x+4}$

g) $7 + \sqrt{3x + 7} = 2$

h) $(6b)^{\frac{1}{2}} = (8 - 2b)^{\frac{1}{2}}$

Simplify each expression.

10. $25^{\frac{1}{4}} \cdot 25^{-\frac{7}{4}}$

11. $(-64)^{\frac{1}{3}}$

12. $\left(\frac{x^8}{y^4}\right)^{\frac{3}{4}}$

13. $\left(\frac{x^3}{125}\right)^{\frac{1}{3}}$

14. $(-8x^{18})^{\frac{2}{3}} (\sqrt[3]{y^6})$

15. $(a^4b^8)^{-\frac{1}{4}}$

16. $(\sqrt[3]{-8x^9})^2$

17. $(3x)^{\frac{2}{3}}(3x)^{\frac{7}{3}}$

18. $\left(\frac{m^8}{n^{12}}\right)^{-\frac{1}{4}}$

Write an equation of variation to represent the situation and solve for the missing information.

- The volume V of a gas kept at a constant temperature varies inversely as the pressure p . If the pressure is 24 pounds per square inch, the volume is 15 cubic feet. What will be the volume when the pressure is 30 pounds per square inch?
- The time to complete a project varies inversely with the number of employees. If 3 people can complete the project in 7 days, how long will it take 5 people?
- To build a sound wall along the highway, the amount of time t needed varies directly with the number of cement blocks c needed and inversely with the number of workers w . A sound wall made of 2400 blocks, using six workers takes 18 hours to complete. How long would it take to build a wall of 4500 blocks with 10 workers?
- The time needed to paint a fence varies directly with the length of the fence and inversely with the number of painters. If it takes five hours to paint 200 feet of fence with three painters how long will it take five painters to paint 500 feet of fence?

Ex) The volume of a sphere is 2145. If the formula $V = \frac{4}{3}\pi r^3$ is used to calculate the volume of a sphere, what is the radius of the sphere?

Solve the following. Show all work!

$$x + \frac{5}{x+6} = \frac{6x-1}{x+6}$$

$$\frac{4}{x-3} - \frac{2}{x+3} = \frac{3x+2}{x^2-9}$$

$$\frac{2}{3x} + \frac{1}{6} = \frac{4}{3x}$$

Simplify:

$$-3\sqrt{12} + 3\sqrt{3} + 3\sqrt{20}$$

$$-2\sqrt{45} - 3\sqrt{20} - 2\sqrt{6}$$

