

Radical Functions and Rational Exponents Unit Test Part 1

Nathan Sykes is taking this assessment.

This assessment was assigned 0 points by Jessica Remmes. Once taken, the actual score will be used instead.

Multiple Choice

1. Find all the real square roots of 0.0036. (1 point)

☐ 0.06 and -0.06
☐ 0.0018 and -0.0018
☐ 0.1897 and -0.1897
☐ 0.6 and -0.6

2. Find the real-number root. (1 point)

$$\sqrt{-1.21}$$

☐ -0.605
☐ 1.1
☐ -1.1
☐ no real number root

3. Which of the following is equal to $\sqrt[3]{18x^9y^4}$? (1 point)

☐ $3x^3y^2$
☐ $3x^4y^2\sqrt{2x}$
☐ $9x^3y^2$
☐ $3x^3y^2\sqrt{2}$

4. What is the simplest form of the expression? (1 point)

$$\frac{\sqrt{2}-\sqrt{10}}{\sqrt{2}+\sqrt{10}}$$

☐ $-\frac{3}{2} + \frac{1}{4}\sqrt{10}$
☐ $-\frac{3}{2} + \frac{1}{2}\sqrt{5}$
☐ $1 - \frac{1}{3}\sqrt{5}$
☐ $1 + \frac{1}{2}\sqrt{5}$

5. What is the simplest form of the number? (1 point)

$$32^{\frac{4}{3}}$$

☐ 31
☐ 25.6
☐ 123
☐ 16

6. What is the solution to $x = \sqrt{2x+3}$? (1 point)

☐ 3
☐ -1
☐ 3 and -1
☐ -3 and 1

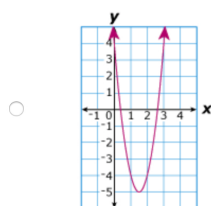
7. Police can estimate the speed of a vehicle before the brakes are applied using the formula (1 point)

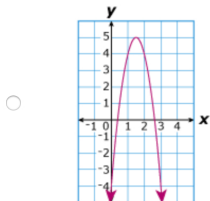
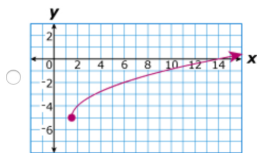
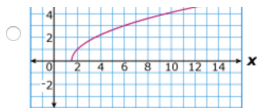
$$0.75d = \frac{s^2}{30.25}, \text{ where } s \text{ is the speed in miles per hour and } d \text{ is the length of the vehicle's skid marks.}$$

What was the approximate speed of a vehicle that left skid marks measuring 150 feet?

☐ about 11 miles per hour
☐ about 15 miles per hour
☐ about 58 miles per hour
☐ about 67 miles per hour

8. Graph $y = \sqrt{2x-3} - 5$. (1 point)





9. You can model the population of a certain city between 1955–2000 by the radical function $P(x) = 55,000\sqrt{x-1,945}$. Using this model, in which year was the population of that city 275,000? (1 point)

- ☐ 1970
☐ 1966
☐ 1964
☐ 1975

10. What is the inverse of f if $f(x) = \sqrt[3]{x-2}$? (1 point)

- ☐ $f^{-1}(x) = x^3 + 8$
☐ $f^{-1}(x) = 2 - \sqrt[3]{x}$
☐ $f^{-1}(x) = x^3 + 2$
☐ $f^{-1}(x) = \frac{1}{\sqrt[3]{x-2}}$

Short Answer

Note: Your teacher will review your responses to questions 12–15 to ensure you receive proper credit for your answers.

11. Describe the relationship of input and output values for composite functions. (2 points)

12. Explain how you know if a radical expression is in simplest form. (2 points)

13. How can you tell if radicals are like radicals? (2 points)

14. Is the inverse of a function always a function? Explain. (2 points)

