

Algebra 1 · Exponent Rules, Radicals and Rational Exponents · Test

Common Core N-RN.A.1, N-RN.A.2 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This test covers Common Core standards N-RN.A.1 and N-RN.A.2: integer exponent rules, rational exponents, radicals and simplifying square roots. Nine questions are worth 20 points in total. Show your work, write answers in simplest form, and use a calculator only for decimal approximations.

Test information

- **Grade:** Algebra 1
- **Chapter:** Exponent Rules, Radicals and Rational Exponents
- **Common Core:** N-RN.A.1, N-RN.A.2
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 2 pts; Question 4: 2 pts; Question 5: 2 pts; Question 6: 3 pts; Question 7: 2 pts; Question 8: 3 pts; Question 9: 2 pts)

Question 1: Powers of 3 (2 points)

The table shows powers of 3.

n	3	2	1	0	-1	-2
3^n	27	9	3	?	$\frac{1}{3}$	?

÷3

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Powers of 3.

- Find 3^0 . (1 point)
- Find 3^{-2} . (1 point)

Question 2: Monomial products and quotients (2 points)

Simplify. Assume no variable equals 0.

a. $(4x^3y)(-2x^2y^4)$ (1 point)

b. $\frac{18a^7b^2}{6a^2b}$ (1 point)

Question 3: Combining power rules (2 points)

Simplify and write each answer with positive exponents.

a. $(x^4)^{-2} \cdot x^{11}$ (1 point)

b. $(2x^{-2}y)^3$ (1 point)

Question 4: Rational exponent values (2 points)

Evaluate.

a. $25^{3/2}$ (1 point)

b. $32^{-2/5}$ (1 point)

Question 5: Radical and exponent forms (2 points)

Rewrite each expression in the other form.

a. Write $\sqrt[3]{x^4}$ with a rational exponent. (1 point)

b. Write $y^{5/2}$ as a radical. (1 point)

Question 6: Simplify square roots (3 points)

Write each expression in simplest form. Assume $x > 0$.

a. $\sqrt{45}$ (1 point)

b. $\sqrt{80}$ (1 point)

c. $\sqrt{12x^5}$ (1 point)

Question 7: Exponent rules with fractions (2 points)

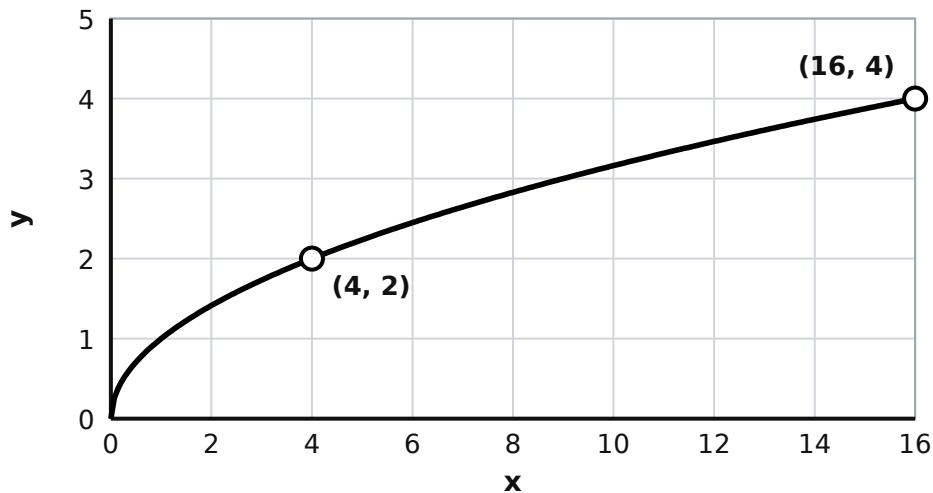
Simplify. Assume $x > 0$.

a. $(x^{3/4})^8$ (1 point)

b. $\frac{x^{7/3}}{x^{1/3}}$ (1 point)

Question 8: Graph of a rational power (3 points)

The graph shows $y = x^{1/2}$.

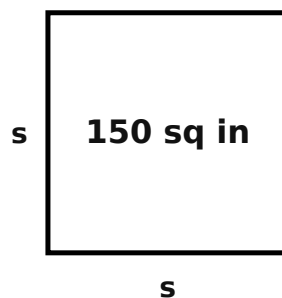


The graph of $y = x^{1/2}$.

- Find y when $x = 16$. (1 point)
- Write the equation using a radical. (1 point)
- Does the point $(25, 5)$ lie on the graph? Show why. (1 point)

Question 9: Square frame (2 points)

A square picture frame has an area of 150 square inches. Find its side length in simplest radical form (1 point) and to the nearest tenth of an inch (1 point).



A square frame, area 150 square inches.