

Algebra 2 - Radicals and Rational Exponents - Test

Common Core N-RN.A.1, N-RN.A.2 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

This 45-minute test on radicals and rational exponents has 9 questions worth 20 points in total. The questions move from direct skills to multi-step problems. Show your work, because partial credit is given for a correct setup and sound reasoning.

About this test

- Grade: Algebra 2
- Chapter: Radicals and Rational Exponents
- Standards: N-RN.A.1, N-RN.A.2
- Time: 45 minutes
- Total: 20 points

Question 1 - Convert forms [2 pts]

- Write $\sqrt[5]{x^2}$ with a rational exponent. (1 point)
- Write $7^{1/3}$ as a radical. (1 point)

Question 2 - Evaluate [3 pts]

Evaluate each expression without a calculator.

- $64^{1/3}$ (1 point)
- $32^{3/5}$ (1 point)
- $4^{-3/2}$ (1 point)

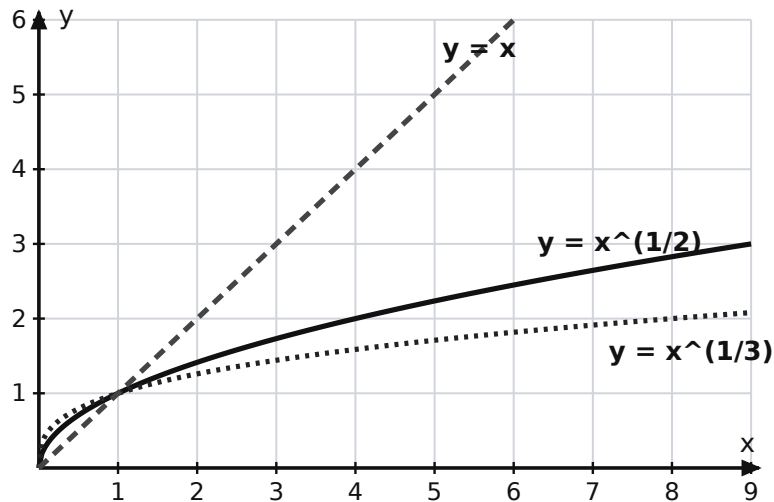
Question 3 - Variable expressions [2 pts]

Simplify each expression.

- $x^{3/5} \cdot x^{7/5}$ (1 point)
- $(27a^6)^{1/3}$ (1 point)

Question 4 - Quotient [2 pts]

Simplify $\frac{x^{7/3}y^{-1/2}}{x^{1/3}y^{3/2}}$ and write the answer with positive exponents.

Question 5 - Solve [3 pts]

Graphs of $y = x^{1/2}$ and $y = x^{1/3}$.

Solve $x^{2/3} = 25$ for all real x . Check each solution.

Question 6 - Animal metabolism [2 pts]

Mass m (kg)	$m^{3/4}$	$R = 70 m^{3/4}$
1	?	?
16	?	?
81	?	?

Fill in the table.

Metabolic rate is $R = 70m^{3/4}$ kcal per day. Complete the table.

Question 7 - Find the error [2 pts]

Liam wrote $8^{2/3} = \sqrt{8^3} = \sqrt{512}$. Explain the error and find the correct value of $8^{2/3}$.

Question 8 - Kepler's law [2 pts]

a (AU)	T (years)
4	8
9	27
?	125

Planet data: $T = a^{3/2}$.

A planet has period $T = a^{3/2}$ years where a is its distance in astronomical units. A planet has period 125 years. Find a .

Question 9 - Growth factor [2 pts]

A colony triples every 2 hours, so its hourly growth factor is $3^{1/2}$. Find the multiplier after 6 hours and after 5 hours (leave the second answer in radical form).