

Solving Radical Equations.

Remember to
check for
extraneous
solutions.


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1.) $\sqrt{3x-3} = 2$

2.) $2\sqrt[3]{x} + 5 = 1$

3.) $\sqrt{10x-1} - 7 = -5$

4.) $3+x = \sqrt{4x+9}$

5.) $x-4 = \sqrt{2x-9}$

6.) $x = \sqrt[3]{2x^2+8x}$

Radical Equation Word Problems

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1. The Beaufort scale is a system that measures wind speed and describes conditions at sea and on land. The scale's range is from 0 to 12. A zero on the Beaufort scale means that the wind speed is less than 1 mile per hour and the conditions at sea and on land are calm. A twelve on the Beaufort scale represents hurricane conditions with wind speeds greater than 74 miles per hour, resulting in greater than 50-foot waves at sea and severe damage to structures and landscape.

Consider the equation $V = 1.837B^{\frac{3}{2}}$ that models the relationship between wind speed in miles per hour V and the Beaufort numbers B . Determine the Beaufort number for a wind speed of 20 miles per hour.

2. In medicine, Body Surface Area BSA is used to help determine proper dosage for medications. The equation $BSA = \frac{\sqrt{W \cdot H}}{60}$ models the relationship between BSA in square meters, the patient's weight W in kilograms, and the patient's height H in centimeters. Determine the height of a patient who weighs 90 kilograms and has a BSA of 2.1.

3. Big Ben is the nickname of a well-known clock tower in London, England, that stands 316 feet tall. The clock is driven by a 660-pound pendulum in the tower that continually swings back and forth. The relationship between the length of pendulum L in feet and the time it takes for a pendulum to swing back and forth one time, or its period T , is modeled by the equation $T = 2\pi\sqrt{\frac{L}{32}}$. If the pendulum's period is 4 seconds, determine the pendulum's length.

19. The radius of a circle on a coordinate grid that is centered at the origin, r , can be calculated by using the equation $r = \sqrt{x^2 + y^2}$, where x represents the x -coordinate and y represents the y -coordinate of a point on the circle. Determine the x -coordinate(s) of a point(s) $(x, 6)$ on a circle with a radius of 8.

20. The minute you drive a newly purchased car off the lot, its resale value drops immediately. The equation $r = 1 - \sqrt[3]{\frac{V}{c}}$ models a car's immediate resale value, where v represents the immediate resale value of the car, c represents the original cost of the car, and r represents the depreciation rate. Determine the immediate resale value of the car if the original cost was \$29,500 and the depreciation rate is 7%. Round your answer to the nearest cent.