

1. Solve for x if $2\sqrt{x+4} = 1 + \sqrt{2x+9}$.
2. Divide the complex numbers $\frac{6+3i}{6-3i}$. Your answer should have a real number in the denominator.
3. What are the real and imaginary parts of the imaginary number $(2i+3)(7i-5)$?
4. Solve $\left|\frac{1}{2} - \frac{3x}{8}\right| = 1$ for x .
5. Solve $|x+2| = |4-2x|$ for x .
6. Solve $|34x+45| > 129$ for x .
7. If the voltage in an electric circuit is kept at the same level, the current varies inversely with resistance. The current measure 40 amps when the resistance is 270 ohms. Find the current when the resistance is 100 ohms.
8. Write a mathematical model for the following situation: The strength of a rectangular beam varies directly with its width and the square of its depth.
9. A car's stopping distance varies directly with the square of its speed. A car that is traveling at 30mph can stop in 40 ft. What distance will it take to stop if it is traveling at 60 mph?

Solutions

1. $x = 0$
2. $\frac{3+4i}{5}$
3. Real part is -29 and the imaginary part is 11 .
4. $x = -\frac{4}{3}$ and $x = 4$
5. $x = \frac{2}{3}$ and $x = 6$
6. $x < -\frac{87}{17}$ and $x > \frac{42}{17}$
7. 108 amps
8. $s = kwd^2$, where s is the strength, k is the proportionality constant, w is the width of the beam, and d is the depth of the beam.
9. 160 ft