

1. _____ Solve the absolute value equation: $|x^2 - 8| = 1$
2. _____ Find the vertex of the parabola for the function: $f(x) = 2x^2 - 3x - 2$
3. _____ Solve the rational equation: $\frac{1}{x} = \frac{2}{x-2} + 3$
4. _____ Find the value, to the nearest cent, in 3 years of an initial investment of \$1500 at an interest rate of 6%, compounded continuously.
5. _____ A wire of length 30 feet is attached to the roof of a building and to a stake 10 feet from the building. Find the angle, to the nearest tenth of a degree, the wire makes with the side of the building.
6. _____ Write as a sum of two trigonometric functions: $\sin 3x \cos 2x$
7. _____ Find: $(\sqrt{-2} + i)^4$ (Simplify completely. Leave answer in radical form.)
8. _____ Evaluate the limit: $\lim_{x \rightarrow \pi} \frac{\sin x}{x - \pi}$
9. _____ Find the area of triangle ABC if $A = 30^\circ$, $b = 10$ inches, and $c = 20$ inches.
10. _____ Solve the following system of equations:
$$\begin{cases} x + 3y - z = 0 \\ x + 4y + z = -2 \\ 2x + 6y - z = 1 \end{cases}$$
11. _____ Write the partial fraction decomposition of: $\frac{5x^2 - 7x + 6}{(x^2 + 1)(x - 3)}$
12. _____ Find the equation of the ellipse in standard form: $4x^2 + 8x + y^2 = 0$
13. _____ If you have four different math books, two different biology books, and three different chemistry books, how many ways are there to arrange the books on one row of a bookshelf if they must be grouped by subject?
14. _____ What is the value of x in the equation: $x^x = 2^{2048}$
15. _____ How many different arrangements of the letter in the word CHATTAHOOCHEE are there?