What is the period of the function \( f(x) = \cos^4 x - \sin^4 x \)?
Given: \( y = \cos \left( x + \frac{\pi}{3} \right) + \sin \left( x + \frac{\pi}{6} \right) \), what is the product of the amplitude and the period of \( y \)?
Three fair 6 sided dice are rolled. The probability that the sum is 6, given at least one die shows a 1, is \( \frac{L}{U} \) in simplest form. What does L+U=?
Given $|3k - 6| + |k + 8| = 5$: How many real solutions exist for this equation?
Given that $\sec x + 1 = \tan^2 x$, the sum of the solutions in the interval $[0, 2\pi)$ is $L\pi$. What is $L$?
Simplify: \(2\log_{27} 216 - 2\log_{27} \frac{4}{27}\) = ?
Using Cramer’s rule you are given:

\[
\begin{bmatrix}
8 & 1 & -2 \\
5 & 2 & -1 \\
9 & -3 & 1 \\
4 & 1 & -2 \\
3 & 2 & -1 \\
0 & -3 & 1
\end{bmatrix}
\]

\[
x = \frac{\begin{bmatrix}
8 & 1 & -2 \\
5 & 2 & -1 \\
9 & -3 & 1 \\
3 & 2 & -1 \\
0 & -3 & 1
\end{bmatrix}}{\begin{bmatrix}
8 & 1 & -2 \\
5 & 2 & -1 \\
9 & -3 & 1 \\
4 & 1 & -2 \\
3 & 2 & -1 \\
0 & -3 & 1
\end{bmatrix}}
\]

What is the numerical value of \( z \) for this system?
Given: \( \sqrt{167 + \frac{1}{169}} \)

Simplify the radical as a mixed number, \( \frac{Z}{U} \), where \( Z \), \( L \), and \( U \) are positive integers with \( L < U \), and then find \( Z + L + U \).
If \( \cos x + \sin x = 0.5 \), what does \( \cos^2(2x) \) equal?
What is the area enclosed by the triangle formed by the vertex and the endpoints of the latus rectum for the following conic?

\[ x^2 - 12y - 51 = 6x \]
A sphere of radius 5 is inscribed in a right circular cone whose height is 18. What is the diameter of the base of the cone?
In a geometric series of positive terms, the 5th term minus the 4th term is 576, and the 2nd term minus the 1st term is 9. What is the sum of the 1st and 2nd terms of the series?
What is the sum of all integer solutions to $1 < (k - 2)^2 < 25$?