

Final Exam Review #3

Find all the solutions in the interval $[0, 2\pi)$ for each equation.

1. $4\cos^2 \theta - 1 = 0$

2. $2\sin^2 \theta - 1 = 0$

3. Verify the identity: $\cot x + 1 = \csc x(\cos x + \sin x)$

Rewrite each as a positive acute angle and then find the exact value.

4. $\sin 240$

5. $\sec(-750)$

6. The sides of a parallelogram measure 10cm and 18cm. One angle of the parallelogram measures 46 degrees. What is the area of the parallelogram, to the nearest square centimeter?

7. Two forces of 25 newtons and 85 newtons acting on a body form an angle of 55° .

- Find the magnitude of the resultant force, to the nearest hundredth of a newton.
- Find the angle, to the nearest degree, between the smaller force and the resultant.

8. Using determinants, find the area of a triangle with vertices $(0, 6)$, $(5, 1)$ and $(2, -2)$.

9. Find the value of b that makes $h(x)$ continuous.

$$h(x) = \begin{cases} 4x+1 & x < 3 \\ x^2 + bx & x \geq 3 \end{cases} \text{ at } x = 3$$

10. Find the partial fractions whose sums is $\frac{10x-35}{x^2-5x}$.

11. Solve the system of equations

$$\begin{aligned}x - 2y + z &= -1 \\2x + 3y - 2z &= -3 \\x + 3y - 2z &= -2\end{aligned}$$

12. Determine if the function $f(x) = \begin{cases} x^2 + 6x + 7 & x \geq 3 \\ 2x + 4 & x < 3 \end{cases}$ is continuous at $x = 3$.