

Second Final Exam Review:

1. Evaluate: $\sin(225^\circ) - \cos(315^\circ)$

2. Find an equivalent to the expression below?

$$\tan \theta + \frac{\cos \theta}{1 + \sin \theta}$$

3. Find an equivalent to the expression below?

$$\frac{1}{1 - \sin \theta} + \frac{1}{1 + \sin \theta}$$

4. Find the asymptotes for the following functions:

a. $f(x) = 2 \csc(4x) - 3$

b. $f(x) = -3 \sec\left(\frac{\pi}{2}x\right)$

c. $f(x) = 2\tan\frac{\pi}{4}x$

5. Find the horizontal shift(Phase shift): $f(x) = -4\sin\left(\frac{\pi}{7}x - \pi\right) - 2$

6. Given $\cos x = -\frac{1}{10}$ $\pi < x < \frac{3\pi}{2}$. Find the value of $\cos(2x)$

7. A string running from the ground to the top of a fence has an angle of elevation of 45° . The string is 14 feet long. What is the distance between the fence and where the string is pegged to the ground?

8. State the coordinates of the vertex for the given parabola. $y^2 - 2x + 2y = 13 = 0$

9. State the coordinates of the foci for the given ellipse. $\frac{x^2}{36} + \frac{y^2}{49} = 1$

10. Find the sum of the vectors: $\mathbf{v} = -4 \mathbf{i} - 6 \mathbf{j}$ and $\mathbf{u} = -4 \mathbf{i} + 2 \mathbf{j}$

11. Given vectors: $\mathbf{u} = \langle -6, -3 \rangle$, $\mathbf{v} = \langle -3, 5 \rangle$.

12. Find the direction angle that this vector makes with the positive x axis. $\mathbf{v} = \langle -2\sqrt{3}, -2 \rangle$.

13. A vector has a magnitude 10 and it has a direction angle of $\theta = \frac{2\pi}{3}$ with the positive x-axis. Find the vector.

14. Write the equation $x^2 + (y - 8)^2 = 64$ to polar coordinates.

15. Convert $3x^2 + 3y^2 - 12x = 0$ to polar form.