Final Review - Non-Calculator Part

Written. Show all work to justify your answers. Answers with no work or insufficient work will receive no credit.

Solve the equation in the interval [0°, 360°).

1) $\sin^2\theta - \sin\theta - 12 = 0$ 1) _____

Solve the equation for solutions in the interval $[0, 2\pi)$.

2) $\sin 2x + \sin x = 0$ 2) _____

Write the following as an algebraic expression in u, $u > 0$.

3) $\cos(\arctan u)$ 3) _____

Verify that each equation is an identity.

4) $\frac{\sec\theta - 1}{\tan\theta} = \frac{\tan\theta}{\sec\theta + 1}$ 4) _____

Verify that the equation is an identity.

5) $\frac{\cos(x - y)}{\cos(x + y)} = \frac{1 + \tan x \tan y}{1 - \tan x \tan y}$ 5) _____

1) $\emptyset$

2) $\left\{0, \frac{2\pi}{3}, \pi, \frac{4\pi}{3}\right\}$

3) $\frac{\sqrt{u^2 + 1}}{u^2 + 1}$

4) $\frac{\sec\theta - 1}{\tan\theta} = \frac{\sec\theta - 1}{\tan\theta} \cdot \frac{\sec\theta + 1}{\sec\theta + 1} = \frac{\sec^2\theta - 1}{\tan\theta(\sec\theta + 1)} = \frac{\tan^2\theta}{\tan\theta(\sec\theta + 1)} = \frac{\tan\theta}{\sec\theta + 1}$

5) $\frac{\cos(x - y)}{\cos(x + y)} = \frac{\cos x \cos y + \sin x \sin y}{\cos x \cos y - \sin x \sin y} = \frac{1/(\cos x \cos y)}{1/(\cos x \cos y)} \cdot \frac{\cos x \cos y + \sin x \sin y}{\cos x \cos y - \sin x \sin y} = \frac{1 + \tan x \tan y}{1 - \tan x \tan y}$.