162 Test 3 take home portion Name: _____

Prove the following. Show all steps.

1. $\sin(x - \pi) - \sin(x + \pi) = 0$

2. $\dfrac{\cos(x)}{1 - \sin(x)} = \sec(x) + \tan(x)$

3. $(\sin(x) + \cos(x))^2 = 1 + \sin(2x)$

4. Write in terms of x and y only.

$$\sin(\tan^{-1}(x) - \tan^{-1}(y))$$

5. Use the "double angle formula" to solve

$$2\sin^2(x) = 2 + \cos(2x)$$

6. Write in terms of sine only. (See section 7.2)

$$\sin(x) - \sqrt{3}\cos(x)$$

7. Find $(1-\sqrt{3}i)^6$ by first converting $1-\sqrt{3}i$ to polar (trigonometric) form, then raise to the power of 6, then convert back to standard form.

8. Find all 8 solutions to $x^8 = 1$