Advanced Math

5-1
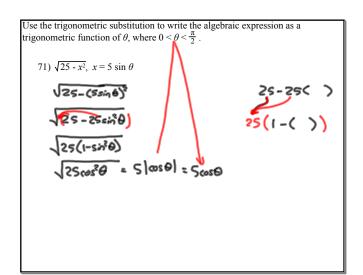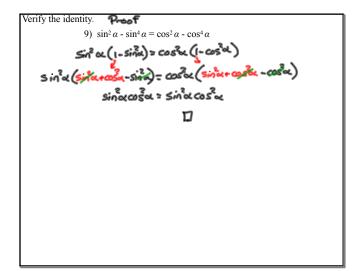### (Day 2)
Using Fundamental Identities

Rewrite the expression so that it is not in fraction form.

61) $\dfrac{\sin^2 y\ (1 + \cos y)}{(1 - \cos y)(1 + \cos y)}$

$\dfrac{\sin^2 y\ (1 + \cos y)}{1 - \cos^2 y}$

$\dfrac{\sin^2 y (1 + \cos y)}{\sin^2 y + \cos^2 y - \cos^2 y} = \dfrac{\sin^2 y (1 + \cos y)}{\sin^2 y}$

$\boxed{1 + \cos y}$

Use the trigonometric substitution to write the algebraic expression as a trigonometric function of θ, where $0 < \theta < \frac{\pi}{2}$.

71) $\sqrt{25 - x^2}$, $x = 5 \sin \theta$

$\sqrt{25 - (5\sin\theta)^2}$

$\sqrt{25 - 25\sin^2\theta}$

$\sqrt{25(1 - \sin^2\theta)}$

$\sqrt{25\cos^2\theta} = 5|\cos\theta| = 5\cos\theta$

$25 - 25(\quad)$

$25(1 - (\quad))$

Verify the identity.   **Proof**

9) $\sin^2\alpha - \sin^4\alpha = \cos^2\alpha - \cos^4\alpha$

$\sin^2\alpha(1 - \sin^2\alpha) = \cos^2\alpha(1 - \cos^2\alpha)$

$\sin^2\alpha(\sin^2\alpha + \cos^2\alpha - \sin^2\alpha) = \cos^2\alpha(\sin^2\alpha + \cos^2\alpha - \cos^2\alpha)$

$\sin^2\alpha\cos^2\alpha = \sin^2\alpha\cos^2\alpha$

□

Assignment:
pg. 463
62,64,72, 74,
76, 81, 82
pg. 471
1-17 all.