



Ch 5 to 7 Review

Inverse Trigonometry

Warmup - Find the exact value of the expression. 1/8

$$a. \sin \left(2 \sin^{-1} \frac{1}{2} \right) \quad \frac{\sqrt{3}}{2}$$

$$b. \cos \left(2 \sin^{-1} \frac{3}{5} \right) \quad \frac{7}{25}$$

$$c. \tan \left[2 \cos^{-1} \left(-\frac{3}{5} \right) \right] \quad \frac{24}{7}$$

5.1 - Trigonometric Identities

Simplify the expression

2/8

$$a. \frac{\cos \theta}{1 - \tan \theta} + \frac{\sin \theta}{1 - \cot \theta}$$

$$\sin \theta + \cos \theta$$

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

$$\sec \theta$$

5.3 - Double-Angle Identities

3/8

Establish the identity.

$$\tan \frac{\theta}{2} + \cot \theta = \csc \theta$$

$$\tan(3\theta) = \frac{3 \tan \theta - \tan^3 \theta}{1 - 3 \tan^2 \theta}$$

5.3 - Double-Angle Identities

4/8

Solve the equation on $0 \leq \theta < 2\pi$.

$$\cos(2\theta) = \cos \theta$$

$$0, \frac{2\pi}{3}, \frac{4\pi}{3}$$

5.3 - Double-Angle Identities

Find $\cos(2x + y)$ for $0 \leq x \leq 90^\circ$ and $0 \leq y \leq 90^\circ$ when $\frac{5}{8}$

$$\tan x = \frac{4}{3} \text{ and } \sin y = \frac{7}{25}.$$

$$\cos(2x + y) = -\frac{336}{625}$$

6.1 - Inverse Trigonometric Functions

Find the exact value of the expression.

6/8

$$a. \sin \left(\sin^{-1} \frac{\sqrt{3}}{2} + \cos^{-1} 1 \right)$$

$$\frac{\sqrt{3}}{2}$$

$$b. \cos \left(\tan^{-1} \frac{4}{3} + \cos^{-1} \frac{12}{13} \right)$$

$$\frac{16}{65}$$

7.2 - Law of Cosines

7/8

Find the missing angles and sides.

$$a = 12, c = 15, B = 47^\circ$$

$$b \approx 11.11$$

$$A \approx 52.17^\circ$$

$$C \approx 80.83^\circ$$

7.3 - Area of a Triangle

8/8

a. Find the area of the triangle $a = 4.1 \text{ in}$, $c = 7.4 \text{ in}$, and $B = 56^\circ$.

$$A = 12.58 \text{ in}^2$$

b. Find the area of the triangle $a = 5 \text{ m}$, $b = 9 \text{ m}$, and $c = 11 \text{ m}$.

$$A = 22.19 \text{ m}^2$$

