

Math 120 – Teamwork # 3

You may write your work here or on another sheet of paper. Please box your answers.

- 1.** Find the exact value of each expression. Give angle measurements in radians.

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

c. $\cos\left(\tan^{-1}\left(-\sqrt{3}\right)\right)$

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

d. $\cos\left(\tan^{-1}\left(-\frac{\sqrt{39}}{5}\right)\right)$

(hint: draw a triangle in the correct quadrant)

- 2.** Find the exact value of each expression. Give angle measurements in radians.

a. $\csc^{-1}\left(-\sqrt{2}\right)$

b. $\sin\left(\cot^{-1}\left(-\sqrt{3}\right)\right)$

2. Find the exact value of each expression. Give angle measurements in radians.
(continued from first page)

c. $\sec\left(\csc^{-1}\left(-\frac{2\sqrt{3}}{3}\right)\right)$

d. $\csc\left(\sec^{-1}\left(-\frac{10}{\sqrt{51}}\right)\right)$

(hint: draw a triangle in the correct quadrant)

3. Subtract. Simplify your answer completely.

$$\frac{5}{x^2 + 7x + 6} - \frac{4}{x^2 + 8x + 12}$$

4. Establish the following identities.
- a. $\cos \theta (\tan \theta + \cot \theta) = \csc \theta$

b.
$$\frac{1 - \sin \theta}{\cos \theta} + \frac{\cos \theta}{1 - \sin \theta} = 2 \sec \theta$$

- 4.** Establish the following identities.
(continued from first page)

c.
$$\frac{1 + \sin \theta}{1 - \sin \theta} - \frac{1 - \sin \theta}{1 + \sin \theta} = 4 \tan \theta \sec \theta$$