

Name : _____

ID: _____

Sec: _____

- 1) Find the measure of the complement angle of the angle
- $19^{\circ}42'5''$

$$89^{\circ}59'60'' - 19^{\circ}42'5'' = 70^{\circ}17'55''$$

- 2) (a) Write
- $\cos(-975^{\circ})$
- in terms of the smallest positive coterminal angle.

$$= \cos(105)$$

- (b) Write
- $\tan(-218^{\circ}30')$
- in terms of the reference angle.

$$= -\tan(38^{\circ}30')$$

- 3) Determine whether the function
- $f(x) = x \tan x + \sec x$
- is even, odd, or neither

$$f(-x) = (-x) \tan(-x) + \sec(-x)$$

$$= x \tan x + \sec x = f(x)$$

Since $f(-x) = f(x)$, it is an even function

- 4) Find the measure of the intercepted arc of a circle with radius 25 cm and central angle
- 42°

$$s = r\theta = 25 \text{ cm} \left(42^{\circ} \frac{\pi}{180^{\circ}} \right) = \frac{7\pi}{3} \text{ cm}$$

- 5) Let
- θ
- be an angle in standard position with
- $\cos \theta = \frac{2}{3}$
- and
- $\sin \theta < 0$
- . Find
- $\tan \theta + \csc \theta$

$$\cos \theta = \frac{2}{3} = \frac{x}{r} \Rightarrow y = -\sqrt{9-4} = -\sqrt{5}$$

$$\Rightarrow \tan \theta + \csc \theta = \frac{-\sqrt{5}}{2} + \left(\frac{3}{-\sqrt{5}} \right) = \frac{-11\sqrt{5}}{10} \quad \cos \theta = \frac{2}{3}$$

- 6) Find
- $W(t)$
- for
- $t = \frac{17\pi}{4}$
- where
- t
- is an arc length on the unit circle.

$$w\left(\frac{17\pi}{4}\right) = \left(\cos \frac{17\pi}{4}, \sin \frac{17\pi}{4}\right) = \left(\cos \frac{\pi}{4}, \sin \frac{\pi}{4}\right) = \left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$$

7) If $-\frac{\pi}{2} < t < \frac{\pi}{2}$, and $x = 2 \tan t$, use replace x by the given expression and simplify

the expression $\frac{1}{\sqrt{4+x^2}}$

$$\begin{aligned} \frac{1}{\sqrt{4+x^2}} &= \frac{1}{\sqrt{4+4\tan^2 t}} = \frac{1}{2\sqrt{1+\tan^2 t}} \\ &= \frac{1}{2|\sec t|} = -\frac{1}{2\sec t} \text{ as } t \in QII \text{ or } QIII \end{aligned}$$

8) Evaluate $\frac{\cos 60^\circ + \sin 270^\circ + \sec 240^\circ}{\tan 135^\circ \sec 150^\circ - \csc 90^\circ \cot 30^\circ}$

$$\begin{aligned} &\frac{\cos 60^\circ + \sin 270^\circ + \sec 240^\circ}{\tan 135^\circ \sec 150^\circ - \csc 90^\circ \cot 30^\circ} \\ &= \frac{\frac{1}{2} + (-1) + (-\sec 60^\circ)}{-\tan 45^\circ (-\sec 30^\circ) - (-1)\sqrt{3}} \\ &= \frac{\frac{-1}{2} - 2}{(-1)\left(-\frac{2}{\sqrt{3}}\right) + \sqrt{3}} = \frac{15 - 10\sqrt{3}}{2} \end{aligned}$$