Math 119 - Quiz 1
Feb. 1, 2008
Wodarz
Version 1

Name:_____

Section:_____

Part 1: _(True/False)_   Circle the correct response. [2 pts each]

For the first two True/False questions, assume that t is a real number, and that $\left(\frac{\sqrt{24}}{7}, \frac{5}{7}\right)$ is a point on the unit circle that corresponds to t.

1. T   F $\sin t = \frac{5}{7}$.

> **Solution.** **TRUE**
>
> $\sin t = y$ where the point on the unit circle is (x, y).
>
> ◀

2. T   F $\sec t = \frac{7}{5}$.

> **Solution.** **FALSE**
>
> $\sec t = \frac{1}{x}$ where the point on the unit circle is (x, y), provided that $x \neq 0$. We have $\sec t = \frac{7\sqrt{24}}{24}$ and $\csc t = \frac{7}{5}$.
>
> ◀

3. T   F   If we convert an angle of measure $\frac{\pi}{3}$ radians to degrees, we obtain $60°$.

> **Solution.** **TRUE**
>
> Multiply the measure in radians by $\frac{180°}{\pi}$ to obtain degrees.
>
> ◀

Part 2: _(Short Answer)_   Fill in each blank/box with the best response.

4. [2 pts] Convert the angle $153.34°$ to $D°M'S''$ form. Round your answer to the nearest second.

Answer: _____

> **Solution.** **153°20′24″**
>
> ◀

5. [2 pts] Use a calculator to approximate the value of $\sec 3.5$ rounded to two decimal places.

Answer: _____

Solution. -1.07

Compute $1/\cos 3.5$. Make sure that your calculator is computing in radians.

◀

6. [4 pts] The point $(3, -2)$ is on the terminal side of an angle θ. What is $\cos \theta$?

Answer:

_____

Solution. $\frac{3\sqrt{13}}{13}$

If a point (x, y) corresponds to the angle θ on a circle of radius r, then $\cos \theta = \frac{x}{r}$. We find $r = \sqrt{13}$, so the answer follows.

◀

7. [2 pts] What is the exact value of $\sin 60°$?

Answer:

_____

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

◀

8. [4 pts] If A denotes the area of a sector of a circle of radius 5 cm formed by a central angle of $\frac{\pi}{3}$ radians, find A.

Answer:

_____

Solution. $\frac{25\pi}{6}$ **cm**

The area of a sector is given by $A = \frac{1}{2}r^2\theta$ where θ is an angle in radians.

◀

Part 1: *(True/False)*   Circle the correct response. [2 pts each]

For the first two True/False questions, assume that t is a real number, and that $\left(\frac{5}{7}, \frac{\sqrt{24}}{7}\right)$ is a point on the unit circle that corresponds to t.

1. T   F $\sin t = \frac{5}{7}$.

>   **Solution.** **FALSE**
>
> $\sin t = y$ where the point on the unit circle is (x, y). We have $\cos t = \frac{5}{7}$ and $\sin t = \frac{\sqrt{24}}{7}$.
>
>   ◀

2. T   F $\csc t = \frac{7}{5}$.

>   **Solution.** **FALSE**
>
> $\csc t = \frac{1}{y}$ where the point on the unit circle is (x, y), provided that $y \neq 0$. We have $\sec t = \frac{7}{5}$ and $\csc t = \frac{7\sqrt{24}}{24}$.
>
>   ◀

3. T   F   If we convert an angle of measure $\frac{\pi}{3}$ radians to degrees, we obtain $30°$.

>   **Solution.** **FALSE**
>
>   Multiply the measure in radians by $\frac{180°}{\pi}$ to obtain degrees. $\frac{\pi}{3}$ radians converts to $60°$.
>
>   ◀

Part 2: *(Short Answer)*   Fill in each blank/box with the best response.

4. [2 pts] Convert the angle $127.46°$ to D°M′S″ form. Round your answer to the nearest second.

>   **Answer:**
>   _____

>   **Solution.** **$127°27′36″$**
>
>   ◀

5. [2 pts] Use a calculator to approximate the value of $\cot 3.5$ rounded to two decimal places.

>   **Answer:**
>   _____

Solution. 2.67

Compute $1/\tan 3.5$. Make sure that your calculator is computing in radians.

◄

6. [4 pts] The point $(3, -2)$ is on the terminal side of an angle θ. What is $\sin\theta$?

   Answer:

   Solution. $\frac{-2\sqrt{13}}{13}$

   If a point (x, y) corresponds to the angle θ on a circle of radius r, then $\sin\theta = \frac{y}{r}$. We find $r = \sqrt{13}$, so the answer follows.

◄

7. [2 pts] What is the exact value of $\tan 60°$?

   Answer:

   Solution. $\sqrt{3}$

◄

8. [4 pts] If A denotes the area of a sector of a circle of radius 7 cm formed by a central angle of $\frac{2\pi}{3}$ radians, find A.

   Answer:

   Solution. $\frac{98\pi}{6}$ cm

   The area of a sector is given by $A = \frac{1}{2}r^2\theta$ where θ is an angle in radians.

◄