Precalculus Name_____

Pre 4.2 (Unit Circle) Period_____Date_____

Find the exact value of the following functions. Use the unit circle.

1. $\sin 135^o$

2. $\tan 240^o$

3. $\sin(-150^o)$

4. $\csc(-420^o)$

5. $\cos\frac{7\pi}{4}$

6. $\cot\left(\frac{-8\pi}{3}\right)$

7. $\tan\frac{-3\pi}{4}$

8. $sec\frac{11\pi}{6}$

9. $\cos(-180^o)$

10. $tan\frac{\pi}{2}$

11. $\sin 315^o$

12. $\cot\frac{3\pi}{2}$

13. In what quadrants will sine be a positive value? A negative value?

14. In what quadrants will cosine be a positive value? A negative value?

15. In what quadrants will tangent be a positive value? A negative value?

16. In an ordered pair format on the unit circle, the sine value is associated with what coordinate value?

17. In an ordered pair format on the unit circle, the cosine value is associated with what coordinate value?

18. In an ordered pair format on the unit circle, how do you calculate the tangent?

**The terminal side of angle $\theta$ in standard position intersects the unit circle at each point *P*. State the value of the requested trig function.**

**19.** $P\left(\frac{3}{5}, \frac{4}{5}\right)$

$\sin\theta =$

**20.** $P\left(\frac{5}{13}, -\frac{12}{13}\right)$

$\cos\theta =$

**21.** $P\left(-\frac{9}{41}, -\frac{40}{41}\right)$

$\sin\theta =$

**Using your unit circle, find the exact value of each function. (This means no decimals!)**

**22.** $\sin 510°$

**23.** $\cos(-45°)$

**24.** $\tan(240°)$

**25.** $\cot\frac{5\pi}{4}$

**26.** $\cos\frac{3\pi}{2}$

**27.** $\sec 3\pi$

**28.** $\sin\frac{7\pi}{6}$

**29.** $\cos\left(-\frac{4\pi}{3}\right)$

**30.** $\tan(-\pi)$

**31.** What is the radius of the unit circle?

**32.** One full rotation is exactly how many radians?

**33.** If $\cos\theta = \frac{1}{2}$ and $\theta$ is in Q IV, what is $\theta$ in radians?

**34.** If $\sin\theta = -\frac{\sqrt{3}}{2}$ and $\theta$ is in Q III, what is $\theta$ in degrees?

**35.** In which quadrant would θ be located if:

a) $\tan\theta < 0$ and $\cos\theta < 0$?

b) $\sin\theta > 0$ and $\cos\theta > 0$?

c) $\sin\theta < 0$ and $\tan\theta > 0$?

**36.** List two angles in Q I such that $0 < \theta \leq 4\pi$ and $\cos\theta = \frac{\sqrt{2}}{2}$.

(Hint: Find one angle in Q I that fits the requirements. The second angle will be coterminal to the first.)

**37.** Considering the diagram shown, answer each of the questions below.

a) What is the value of $x$ ?
b) What is the measure of the angle $\beta$ in radians?
c) What is the value of the reference angle associated with β ?
d) What is the value of the tangent of angle β ?