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

1. sin 135°

2. tan 240°

3. $\sin(-150^{\circ})$

4. csc (-420°)

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. $\cos(-180^{\circ})$

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

11. $\sin 315^{\circ}$

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 θ in standard position intersects the unit circle at each point P. State the value of the requested trig function.

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

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

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

$$\sin \theta =$$

$$\cos \theta =$$

$$\sin \theta =$$

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

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

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

27. sec
$$3\pi$$

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

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

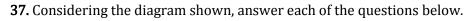
30.
$$\tan (-\pi)$$

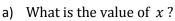
- **31.** What is the radius of the unit circle?
- **32.** One full rotation is exactly how many radians?
- **33.** If $\cos \theta = \frac{1}{2}$ and θ is in Q IV, what is θ in radians?
- **34.** If $\sin \theta = -\frac{\sqrt{3}}{2}$ and θ is in Q III, what is θ in degrees?

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 $0 < \theta \le 4\pi$ 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.)





- b) What is the measure of the angle β 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 ?

