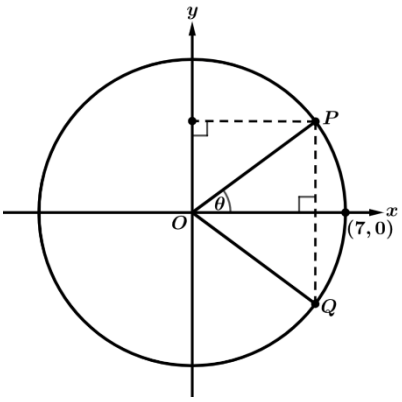


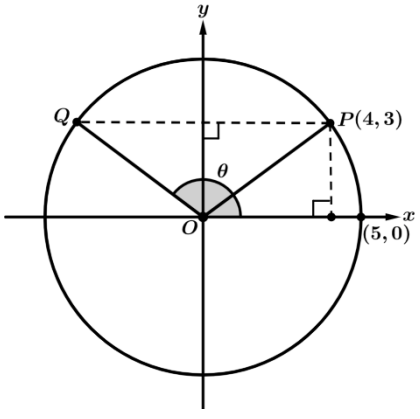
1. The figure shows a circle centered at the origin with an angle of measure θ in standard position. The terminal ray of the angle intersects the circle at point P. The coordinates of P are (x, y) and the coordinates of Q are $(x, -y)$. Which of the following is true about the sine of θ?

(A) $\sin\theta = \frac{x}{7}$, because it is the ratio of the horizontal displacement of P from the y-axis to the distance between the origin and P.

(B) $\sin\theta = \frac{x}{7}$, because it is the ratio of the horizontal displacement of Q from the y-axis to the distance between the origin and Q.

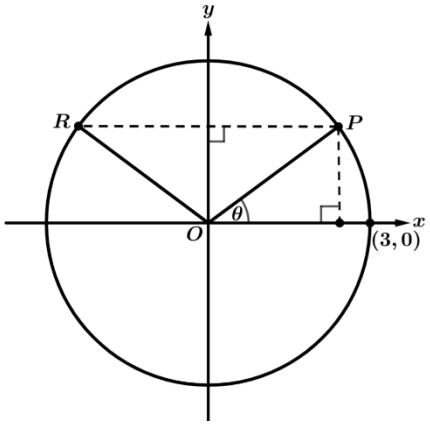
(C) $\sin\theta = \frac{-y}{7}$, because it is the ratio of the vertical displacement of Q from the x-axis to the distance between the origin and Q.

(D) $\sin\theta = \frac{y}{7}$, because it is the ratio of the vertical displacement of P from the x-axis to the distance between the origin and P



2. The figure shows a circle centered at the origin with an angle of measure θ in standard position. The terminal ray of the angle intersects the circle at point Q. The coordinates of P are $(4, 3)$ and the radius of the circle is 5. What is the value of $\cos\theta$?

(A) $\cos\theta = -\frac{4}{5}$ (B) $\cos\theta = -\frac{3}{4}$ (C) $\cos\theta = \frac{3}{5}$ (D) $\cos\theta = \frac{4}{5}$



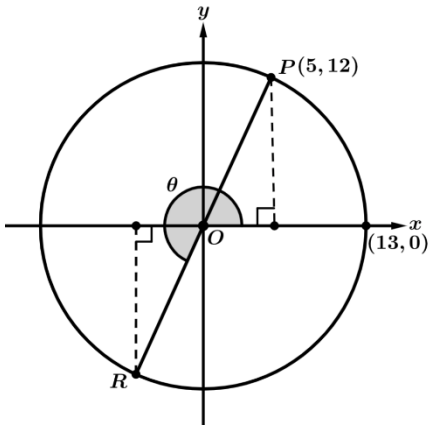
3. The figure shows a circle centered at the origin with an angle of measure θ in standard position. The terminal ray of the angle intersects the circle at point P. The coordinates of P are (x, y) and the coordinates of R are $(-x, y)$. Which of the following is true about the cosine of θ?

(A) $\cos\theta = \frac{x}{3}$, because it is the ratio of the horizontal displacement of P from the y-axis to the distance between the origin and P.

(B) $\cos\theta = \frac{-x}{3}$, because it is the ratio of the horizontal displacement of R from the y-axis to the distance between the origin and R.

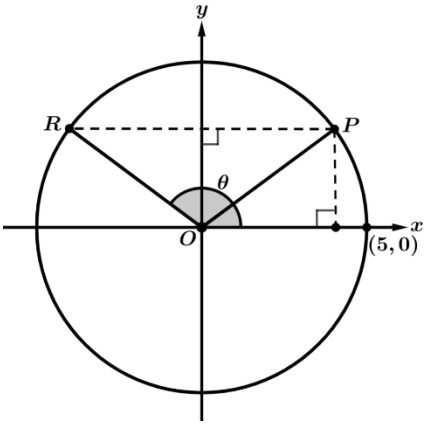
(C) $\cos\theta = \frac{y}{3}$, because it is the ratio of the vertical displacement of P from the x-axis to the distance between the origin and P.

(D) $\cos\theta = \frac{y}{3}$, because it is the ratio of the vertical displacement of R from the x-axis to the distance between the origin and R.



4. The figure shows a circle centered at the origin with an angle of measure θ in standard position and the line segment connecting points P and R. The terminal ray of the angle intersects the circle at point R. The coordinates of P are $(5,\ 12)$ and the radius of the circle is 13. What is the value of $\tan\theta$?

(A) $-\frac{5}{12}$ (B) $\frac{5}{12}$ (C) $-\frac{12}{5}$ (D) $\frac{12}{5}$



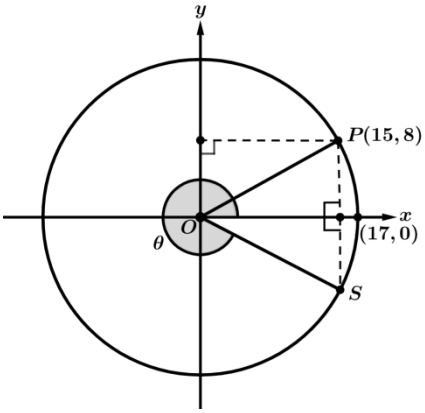
5. The figure shows a circle centered at the origin with an angle of measure θ in standard position. The terminal ray of the angle intersects the circle at point R. The coordinates of P are (x, y) and the coordinates of R are $(-x, y)$. Which of the following is true about the cosine of θ?

(A) $\cos\theta = \frac{x}{5}$, because it is the ratio of the horizontal displacement of P from the y-axis to the distance between the origin and P.

(B) $\cos\theta = \frac{-x}{5}$, because it is the ratio of the horizontal displacement of R from the y-axis to the distance between the origin and R.

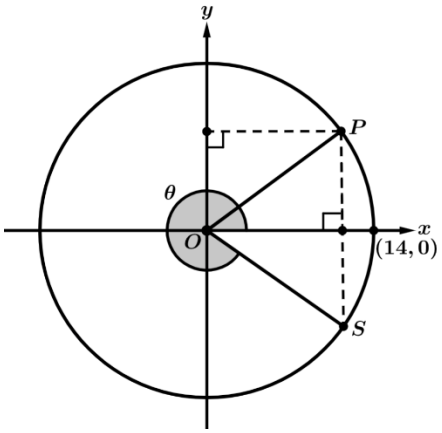
(C) $\cos\theta = \frac{y}{5}$, because it is the ratio of the vertical displacement of P from the x-axis to the distance between the origin and P.

(D) $\cos\theta = \frac{y}{5}$, because it is the ratio of the vertical displacement of R from the x-axis to the distance between the origin and R.



6. The figure shows a circle centered at the origin with an angle of measure θ in standard position. The terminal ray of the angle intersects the circle at point S. The coordinates of P are $(15, 8)$ and the radius of the circle is 17. What is the value of $\sin\theta$?

(A) $-\frac{8}{17}$ (B) $\frac{8}{17}$ (C) $-\frac{15}{17}$ (D) $\frac{15}{17}$



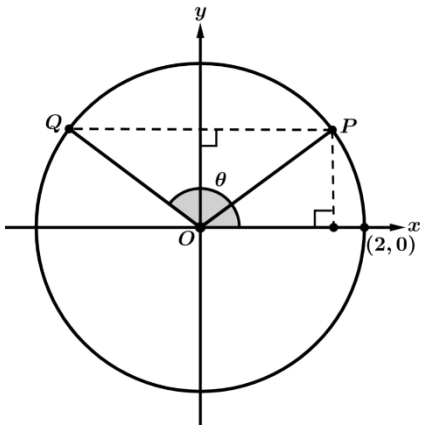
7. The figure shows a circle centered at the origin with an angle of measure θ in standard position. The terminal ray of the angle intersects the circle at point S. The coordinates of P are (x, y) and the coordinates of S are $(x, -y)$. Which of the following is true about the sine of θ?

(A) $\sin\theta = \frac{x}{14}$, because it is the ratio of the horizontal displacement of P from the y-axis to the distance between the origin and P.

(B) $\sin\theta = \frac{x}{14}$, because it is the ratio of the horizontal displacement of S from the y-axis to the distance between the origin and S.

(C) $\sin\theta = \frac{y}{14}$, because it is the ratio of the vertical displacement of P from the x-axis to the distance between the origin and P.

(D) $\sin\theta = \frac{-y}{14}$, because it is the ratio of the vertical displacement of S from the x-axis to the distance between the origin and S.



8. The figure shows a circle centered at the origin with an angle of measure θ in standard position. The terminal ray of the angle intersects the circle at point Q. The coordinates of P are (x, y) and the coordinates of Q are $(-x, y)$. Which of the following is true about the tangent of θ?

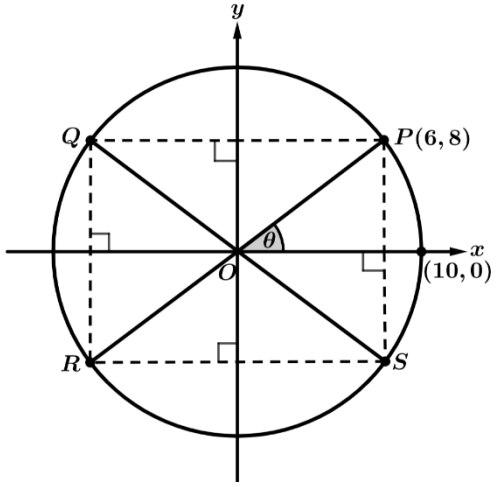
(A) $\tan\theta = \frac{y}{x}$, because it is the ratio of the vertical displacement of P to the horizontal displacement of P.

(B) $\tan\theta = \frac{x}{y}$, because it is the ratio of the horizontal displacement of P to the vertical displacement of P.

(C) $\tan\theta = -\frac{y}{x}$, because it is the ratio of the vertical displacement of Q to the horizontal displacement of Q.

(D) $\tan\theta = -\frac{x}{y}$, because it is the ratio of the horizontal displacement of Q to the vertical displacement of Q.

Directions: Use the information below to answer questions 9 – 14.



The figure shows a circle with radius 10 centered at the origin with an angle of measure θ in standard position. The terminal ray of the angle intersects the circle at point P. The coordinates of P are $(6, 8)$. The points $Q, R,$ and S are the result of reflecting point P across the y-axis, the origin, and the x-axis respectively.

9. What is the cosine of the angle whose terminal ray intersects the circle at point Q?

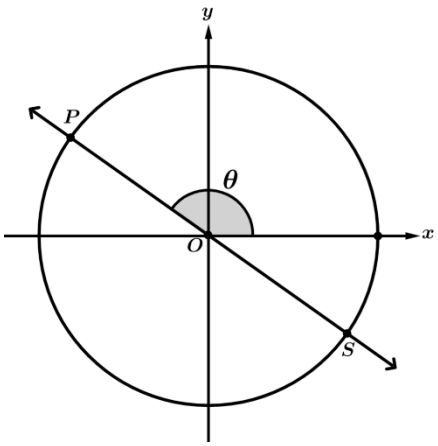
10. What is the sine of the angle whose terminal ray intersects the circle at point S?

11. What is the tangent of the angle whose terminal ray intersects the circle at point Q?

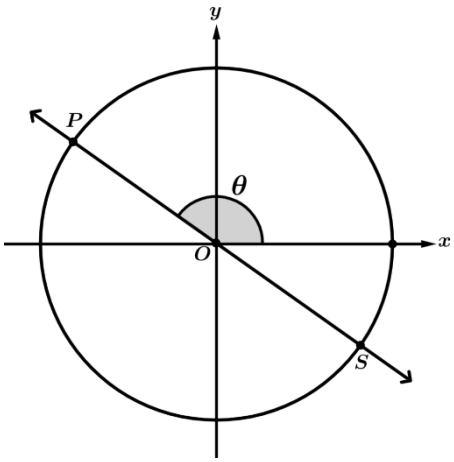
12. What is the cosine of the angle whose terminal ray intersects the circle at point S?

13. What is the sine of the angle whose terminal ray intersects the circle at point R?

14. What is the tangent of the angle whose terminal ray intersects the circle at point R?



15. Let θ be an angle in standard position whose terminal ray intersects the circle at point P and coincides with the line $y = -\frac{3}{4}x$ in quadrant II. The coordinates of P are $(-8,\ y)$. What is the y-coordinate of point P?



16. Let θ be an angle in standard position whose terminal ray intersects the circle at point P and coincides with the line $y = -\frac{5}{7}x$ in quadrant II. The coordinates of P are $(x,\ 12)$. What is the x-coordinate of point S?