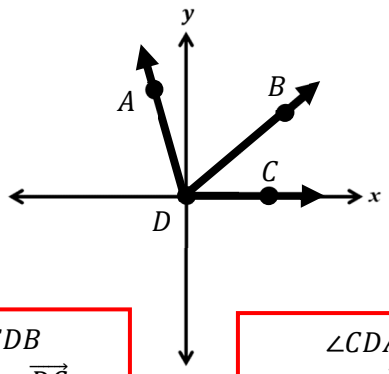
3.2A Radians
AP Precalculus

Solutions

3.2A Practice

For each set of axes, name all the angles that are in standard position. Give the initial ray and terminal ray of each angle.

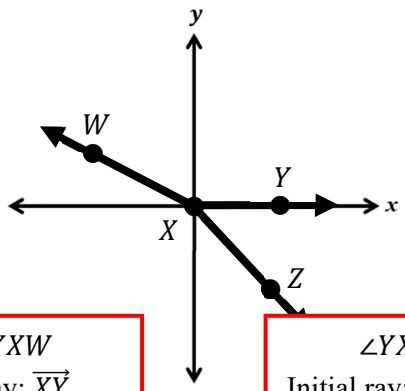
1.



$\angle CDB$
Initial ray: $\overrightarrow{DC}$
Terminal ray: $\overrightarrow{DB}$

$\angle CDA$
Initial ray: $\overrightarrow{DC}$
Terminal ray: $\overrightarrow{DA}$

2.

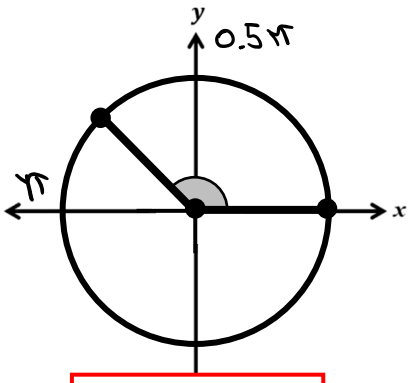


$\angle YXW$
Initial ray: $\overrightarrow{XY}$
Terminal ray: $\overrightarrow{XW}$

$\angle YXZ$
Initial ray: $\overrightarrow{XY}$
Terminal ray: $\overrightarrow{XZ}$

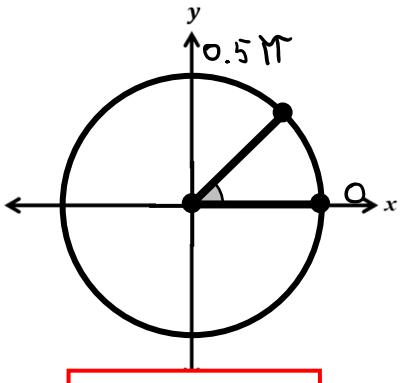
Give an estimate of how many radians the angle represents. For simplification, leave your answer in terms of π and round the coefficient to one or two decimal places.

3.



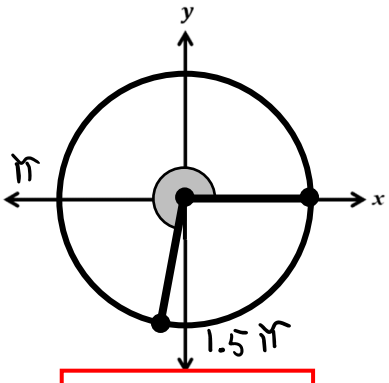
About 0.75π

4.



About 0.25π

5.



About 1.4π

The measurement of an angle in standard position is listed. In which quadrant is the terminal ray?

6. $\theta = 2.9\pi$

$-2\pi = 0.9\pi$

Quadrant II

7. $\theta = 8.2\pi$

$-2\pi \quad -2\pi$

$-2\pi \quad -2\pi = 0.2\pi$

Quadrant I

8. $\theta = 7.2\pi$

$-2\pi \quad -2\pi = 1.2\pi$

-2π

Quadrant III

9. $\theta = -5.2\pi$

$+2\pi \quad +2\pi \quad +2\pi = 0.8\pi$

Quadrant II

10. $\theta = -8.1\pi$

$+2\pi \quad +2\pi \quad +2\pi \quad +2\pi \quad +2\pi = 1.9\pi$

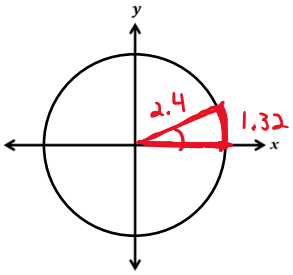
Quadrant IV

Below are various measurements of a circle's radius, an angle within the circle, or the arc subtended by the angle. SKETCH the approximate angle on the axes and find the missing value.

11. Radius is 2.4 and the length of an arc subtended by an angle is 1.32. Find the measure of the angle.

$\theta = \frac{1.32}{2.4}$

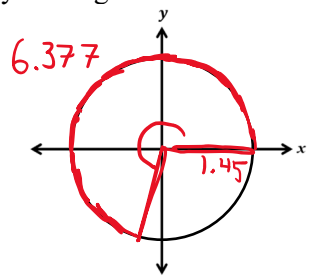
$\theta = 0.55$ radians



12. Radius is 1.45 and an angle is 1.4π radians. Find the length of the arc subtended by the angle.

$1.4\pi = \frac{s}{1.45}$

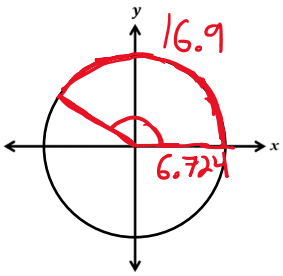
$6.377 \approx s$



13. An angle is 0.8π radians and the length of an arc subtended by the angle is 16.9. What is the radius of the circle?

$0.8\pi = \frac{16.9}{r}$

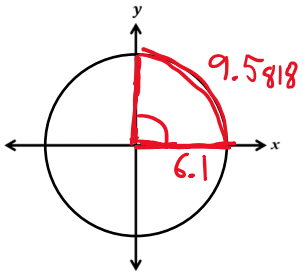
$r \approx 6.724$



14. Radius is 6.1 and an angle is 0.5π radians. Find the length of the arc subtended by the angle.

$0.5\pi = \frac{s}{6.1}$

$9.5818 \approx s$



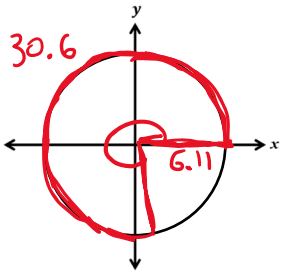
15. Radius is 6.11 and the length of an arc subtended by an angle is 30.6. Find the measure of the angle.

$\theta = \frac{30.6}{6.11}$

$\theta \approx 5.008$ radians

↓

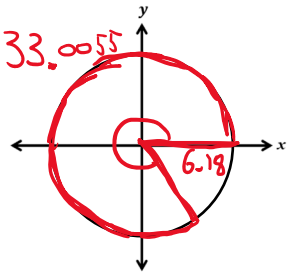
about 1.6π



16. Radius is 6.18 and an angle is 1.7π radians. Find the length of the arc subtended by the angle.

$1.7\pi = \frac{s}{6.18}$

$33.0055 \approx s$



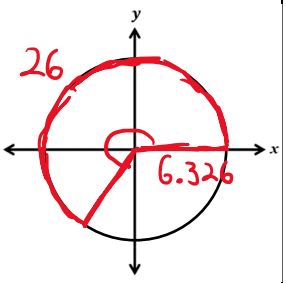
17. An angle is 4.11 radians and the length of an arc subtended by the angle is 26. What is the radius of the circle?

→ 1.3π

$4.11 = \frac{26}{r}$

$r = \frac{26}{4.11}$

$r \approx 6.326$



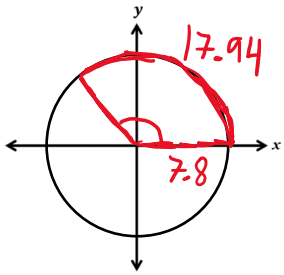
18. Radius is 7.8 and the length of an arc subtended by an angle is 17.94. Find the measure of the angle.

$\theta = \frac{17.94}{7.8}$

$\theta = 2.3$ radians

↓

About 0.7π



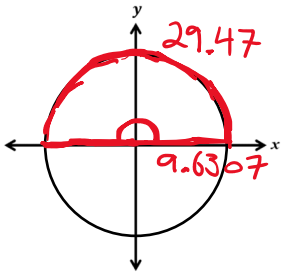
19. An angle is 3.06 radians and the length of an arc subtended by the angle is 29.47. What is the radius of the circle?

↘ about π

$3.06 = \frac{29.47}{r}$

$r = \frac{29.47}{3.06}$

$r \approx 9.6307$



3.2A Radians

3.2A Test Prep

20. An angle with a measure of 5.7π would be equivalent to which of the following angle measures?

$-2\pi = 3.7\pi$

$-2\pi = 1.7\pi$

$-2\pi = -0.3\pi$

D

(A) 2.7π (B) -1.7π (C) -5.7π (D) -0.3π