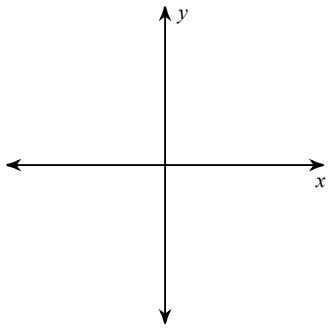
PreAP PreCalculus Name_____

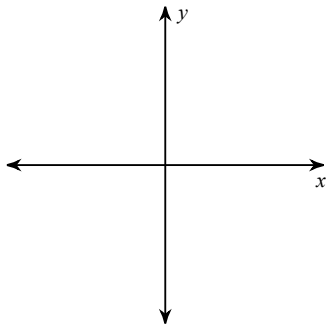
Angles and Coterminal Angles in Radians

Draw an angle with the given measure in standard position.

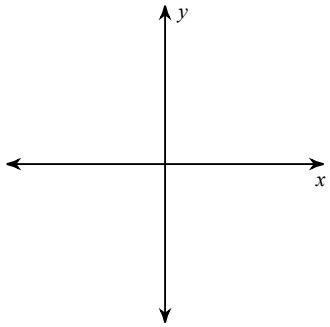
1) $-\frac{2\pi}{3}$



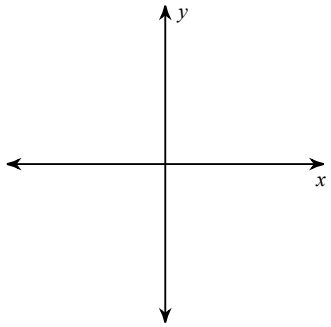
2) $-\frac{13\pi}{6}$



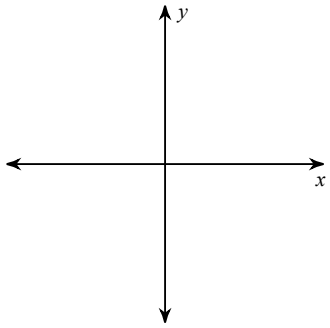
3) $\frac{10\pi}{3}$



4) $\frac{11\pi}{4}$

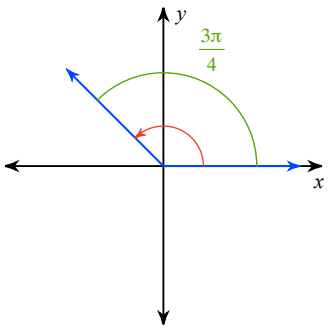


5) $-\frac{9\pi}{4}$

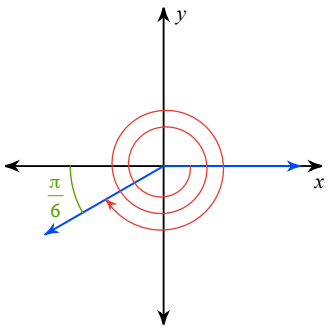


Find the measure of each angle.

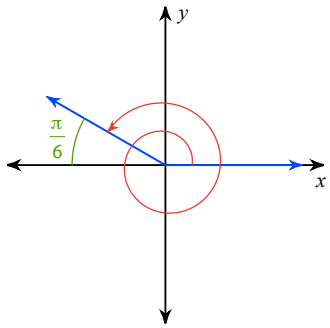
6)



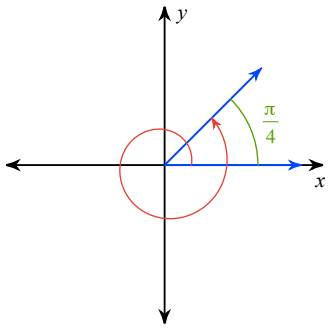
7)



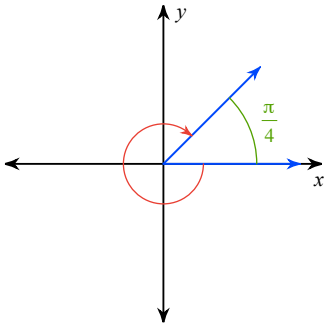
8)



9)



10)



State the quadrant in which the terminal side of each angle lies.

11) $-\frac{23\pi}{6}$

12) $-\frac{\pi}{4}$

13) $\frac{13\pi}{9}$

14) $-\frac{2\pi}{3}$

15) $\frac{3\pi}{4}$

Find a coterminal angle between 0 and 2π for each given angle.

16) $\frac{23\pi}{6}$

17) $\frac{28\pi}{9}$

18) $-\frac{\pi}{6}$

19) $-\frac{13\pi}{6}$

20) $-\frac{53\pi}{36}$

Find a positive and a negative coterminal angle for each given angle.

21) $\frac{5\pi}{6}$

22) $\frac{19\pi}{12}$

23) $\frac{3\pi}{2}$

24) $\frac{55\pi}{18}$

25) $-\frac{37\pi}{12}$

State if the given angles are coterminal.

26) $\frac{29\pi}{18}, \frac{101\pi}{18}$

27) $\frac{65\pi}{36}, \frac{209\pi}{36}$

28) $\frac{59\pi}{36}, -\frac{13\pi}{36}$

29) $\frac{13\pi}{9}, -\frac{5\pi}{9}$

30) $\frac{49\pi}{36}, \frac{121\pi}{36}$