1. In which quadrant does θ terminate if: (a) sine is negative and tangent is negative
   (b) cosecant is positive and secant is negative
                                                    (c) cotangent is negative and cosine is positive

2. In which quadrant does each angle terminate?   (a) $\dfrac{8\pi}{5}$ (b) $-543°$ (c) $\dfrac{23\pi}{7}$ (d) $420°$

3. Find a positive and negative angle that is coterminal with: (a) $73°$ (b) $\dfrac{4\pi}{7}$

4. Change each to degree measure: (a) $\dfrac{8\pi}{3}$ (b) $-\dfrac{4\pi}{15}$

5. Change to radian measure: (a) $125°$ (b) $-540°$

6. If $\sec x = \dfrac{8}{3}$ and x is an angle in Quadrant IV, find: (a) $\sin x$ (b) $\cos x$ (c) $\tan x$ (d) $\csc x$ (e) $\cot x$

7. If $(-5, -6)$ lies on the terminal side of angle A in standard position, find:

     (a) $\sin A$ (b) $\cos A$ (c) $\tan A$ (d) $\csc A$ (e) $\sec A$ (f) $\cot A$

8. Find the reference angle for each: (a) $117°$ (b) $\dfrac{15\pi}{8}$ (c) $-290°$ (d) $-\dfrac{29\pi}{11}$

9. For what angles between 0 and 2π is the secant function undefined?

10. Find the value of each function:

     (a) $\cos 720°$ (b) $\sec 150°$ (c) $\sin(-60°)$ (d) $\tan 225°$ (e) $\csc 180°$ (f) $\cot(-120°)$

     (g) $\cos \dfrac{8\pi}{3}$ (h) $\tan\left(-\dfrac{3\pi}{2}\right)$ (i) $\sec \dfrac{2\pi}{3}$ (j) $\sin \dfrac{13\pi}{6}$ (k) $\csc \dfrac{7\pi}{3}$ (l) $\cot 6\pi$

11. If $\csc\theta > 0$ and $\cot\theta < 0$, in which quadrant does θ terminate?

Find the measure of each angle.

12.

80°

13.

$\frac{5\pi}{12}$

14.

$\frac{\pi}{3}$
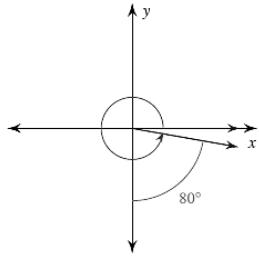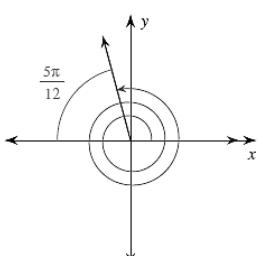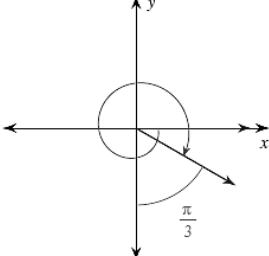
15. Find an angle between 0° and 360° that is coterminal with -435°

16. Find an angle between 0 and 2π that is coterminal with $\frac{11\pi}{3}$.

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

17. $\frac{-7\pi}{6}$

18. 640°

19. **Cos θ** $= \frac{2}{5}$, where **Sin θ** > 0 **and tan θ** > 0. Find the exact values of the five remaining trig functions.

Answers

1a) quadrant IV   1b) quadrant II   1c) quadrant IV

2a) quadrant IV   2B) quadrant II   2c) quadrant III   2d) quadrant I

3a) 433°, −287°   3b) $\frac{18\pi}{7}, \frac{-10\pi}{7}$

4a) 480°   4b) −48°

5a) $\frac{25\pi}{36}$ 5b) -3π

6a) $-\frac{\sqrt{55}}{8}$ 6b) $\frac{3}{8}$ 6c) $-\frac{\sqrt{55}}{3}$ 6d) $-\frac{8\sqrt{55}}{55}$ 6e) $-\frac{3\sqrt{55}}{55}$

7a) $-\frac{6\sqrt{61}}{61}$ 7b) $-\frac{5\sqrt{61}}{61}$ 7c) $\frac{6}{5}$ 7d) $-\frac{\sqrt{61}}{6}$ 7e) $-\frac{\sqrt{61}}{5}$ 7f) $\frac{5}{6}$

8a) θ′ = 63°   8b) θ′ = $\frac{\pi}{8}$ 8c) θ′ = 70°   8d) θ′ = $\frac{4\pi}{11}$ 9) $\frac{\pi}{2}, \frac{3\pi}{2}$

10a) 1   10b) $-\frac{2\sqrt{3}}{3}$ 10c) $-\frac{\sqrt{3}}{2}$ 10d) 1   10e) und.   10f) $\frac{\sqrt{3}}{3}$

10g) $-\dfrac{1}{2}$ 10h) und.   10i) -2 10j) $\dfrac{1}{2}$ 10k) $\dfrac{2\sqrt{3}}{3}$ 10l) und.

11) II   12) 350º   13) $\dfrac{55\pi}{12}$ 14) $\dfrac{-13\pi}{6}$ 15) 285º   16) $\dfrac{5\pi}{3}$

17) $\dfrac{5\pi}{6}$; $\dfrac{-19\pi}{6}$ 18) 280º; -80º   19) $Sin = \dfrac{\sqrt{21}}{5}$; $Tan = \dfrac{\sqrt{21}}{2}$

$Csc = \dfrac{5\sqrt{21}}{21}$; $Sec = \dfrac{5}{2}$; $Cot = \dfrac{2\sqrt{21}}{21}$