

State if the given angles are coterminal. Show work to support your answer!

$\pm 360$   $\pm 2\pi$

13)  $240^\circ, 600^\circ$

$$\begin{array}{r} 240 \\ +360 \\ \hline 600^\circ \end{array} \quad \boxed{\text{yes}}$$

14)  $\frac{15\pi}{8}, \frac{47\pi}{8}$

$$\frac{15\pi}{8} + 2\pi = \frac{15\pi}{8} + \frac{16\pi}{8} = \frac{31\pi}{8}$$

$$\frac{31\pi}{8} + \frac{16\pi}{8} = \frac{47\pi}{8} \quad \boxed{\text{yes}}$$

Find a coterminal angle between  $0^\circ$  and  $360^\circ$ .

$\pm 360$

15)  $640^\circ$

$$\begin{array}{r} 640 \\ -360 \\ \hline 280^\circ \end{array}$$

16)  $-442^\circ$

$$\begin{array}{r} -442 \\ +360 \\ \hline -82 \\ +360 \\ \hline 278^\circ \end{array}$$

Find a coterminal angle between 0 and  $2\pi$ .

$\pm 2\pi$

17)  $-\frac{33\pi}{18} + 2\pi$

$$-\frac{33\pi}{18} + \frac{36\pi}{18} = \frac{3\pi}{18} = \frac{\pi}{6}$$

18)  $\frac{23\pi}{4} - 2\pi = \frac{23\pi}{4} - \frac{8\pi}{4} = \frac{15\pi}{4}$

$$\frac{15\pi}{4} - \frac{8\pi}{4} = \frac{7\pi}{4}$$

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

$\pm 2\pi$

19)  $-\frac{7\pi}{6} + 2\pi = -\frac{7\pi}{6} + \frac{12\pi}{6} = \frac{5\pi}{6}$

20)  $\frac{29\pi}{45} - 2\pi = \frac{29\pi}{45} - \frac{90\pi}{45} = \frac{-61\pi}{45}$

$$-\frac{7\pi}{6} - 2\pi = -\frac{7\pi}{6} - \frac{12\pi}{6} = \frac{-19\pi}{6}$$

$$\frac{29\pi}{45} + 2\pi = \frac{29\pi}{45} + \frac{90\pi}{45} = \frac{119\pi}{45}$$