

PreCalculus
Reference Angles & Coterminal Angles

Name _____

Find each reference angle, if it exists.

1) $\frac{31\pi}{9}$

2) -527°

3) $\frac{13\pi}{12}$

4) 623°

5) $-\frac{19\pi}{15}$

6) $\frac{25\pi}{8}$

7) -250°

8) $\frac{32\pi}{7}$

9) $-\frac{2\pi}{5}$

10) 450°

11) $\frac{22\pi}{3}$

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

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

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

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

Find a coterminal angle between 0° and 360° .

15) 640°

16) -442°

Find a coterminal angle between 0 and 2π .

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

18) $\frac{23\pi}{4}$

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

19) $-\frac{7\pi}{6}$

20) $\frac{29\pi}{45}$