

GSEPre-Calculus- Unit 3: Intro to Trig  
Coterminal/Reference angles

Name \_\_\_\_\_  
Date \_\_\_\_\_ Day \_\_\_\_\_

Determine two coterminal angles (one positive, one negative) and the reference angle for each of the following. If the original problem is in degrees, then your answer is in degrees. If the original problem is in radians, then your answer should be in radians.

1.  $120^\circ$

Positive:  $480^\circ$   
Negative:  $-240^\circ$   
Reference:  $60^\circ$

2.  $-36^\circ$

Positive:  $324^\circ$   
Negative:  $-396^\circ$   
Reference:  $36^\circ$

3.  $300^\circ$

Positive:  $660^\circ$   
Negative:  $-60^\circ$   
Reference:  $60^\circ$

4.  $-740^\circ$

Positive:  $340^\circ$   
Negative:  $-1100^\circ$   
Reference:  $20^\circ$

5.  $-\frac{11\pi}{4}$

Positive:  $5\pi/4$   
Negative:  $-19\pi/4$  or  $-3\pi/4$   
Reference:  $\pi/4$

6.  $-\frac{2\pi}{15}$

Positive:  $2\pi/15$   
Negative:  $-32\pi/15$   
Reference:  $2\pi/15$   
P:  $28\pi/15$   
N:  $-32\pi/15$   
R:  $2\pi/15$

7.  $\frac{7\pi}{8}$

Positive: \_\_\_\_\_  
Negative: \_\_\_\_\_  
Reference: \_\_\_\_\_  
P:  $23\pi/8$   
N:  $-9\pi/8$   
R:  $\pi/8$

8.  $\frac{\pi}{3}$

Positive: \_\_\_\_\_  
Negative: \_\_\_\_\_  
Reference: \_\_\_\_\_  
P:  $7\pi/3$   
N:  $-5\pi/3$   
R:  $\pi/3$

Determine what quadrant in which the angle lies.

9.  $30^\circ$

I

10.  $-245^\circ$

II

11.  $\frac{2\pi}{3}$

II

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

IV