M48C/Schoenbrun Appendix 8.3: Trig Functions

Part I
For each of these angles, find the reference angle and indicate which quadrant the angle is in. Put the answer in the same units (degrees or radians) as the problem. Keep all answers exact.

1) 70°

Quadrant I

Ref : 70°

2) 150°

Quadrant II

Ref : 30°

3) 255°

Quadrant III

Ref : 75°

4) -65°

Quadrant IV

Ref : 65°

5) 487°

Quadrant II

Ref : 53°

6) 190°

Quadrant III

Ref : 10°

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

Quadrant I

Ref : $\frac{\pi}{7}$

8) $\frac{44}{9}\pi$

Quadrant II

Ref : $\frac{\pi}{9}$

9) $-\frac{24}{10}\pi$

Quadrant IV

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

Part II

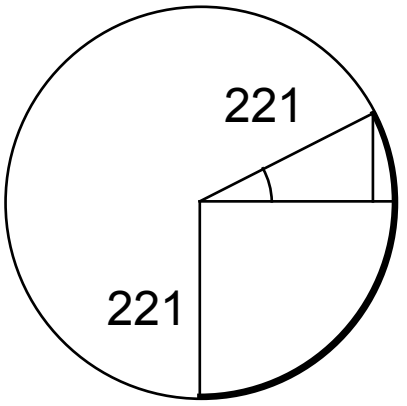
Angle	(cos,sin)	Angle	(cos,sin)	Angle	(cos,sin)	Angle	(cos,sin)
0°	(+1,0)	90°	(0,+1)	180°	(-1,0)	360°	(0,-1)
30°	$\left(+\frac{\sqrt{3}}{2},+\frac{1}{2}\right)$	120°	$\left(-\frac{1}{2},+\frac{\sqrt{3}}{2}\right)$	210°	$\left(-\frac{\sqrt{3}}{2},-\frac{1}{2}\right)$	300°	$\left(+\frac{1}{2},-\frac{\sqrt{3}}{2}\right)$
45°	$\left(+\frac{1}{\sqrt{2}},+\frac{1}{\sqrt{2}}\right)$	135°	$\left(-\frac{1}{\sqrt{2}},+\frac{1}{\sqrt{2}}\right)$	225°	$\left(-\frac{1}{\sqrt{2}},-\frac{1}{\sqrt{2}}\right)$	315°	$\left(+\frac{1}{\sqrt{2}},-\frac{1}{\sqrt{2}}\right)$
60°	$\left(+\frac{1}{2},+\frac{\sqrt{3}}{2}\right)$	150°	$\left(-\frac{\sqrt{3}}{2},+\frac{1}{2}\right)$	240°	$\left(-\frac{1}{2},-\frac{\sqrt{3}}{2}\right)$	330°	$\left(+\frac{\sqrt{3}}{2},-\frac{1}{2}\right)$

Part III

10) Problem 57 from the text:

Ferris Wheels The London Eye is a Ferris wheel constructed on the banks of the River Thames in London. The eye has a radius of about 221 feet and is boarded from the bottom. Determine the height of a person from the bottom of the London Eye after traveling each of the following portions of a revolution.

a. 1/3 of the way around



$\frac{2\pi}{3} - \frac{\pi}{2} = \frac{\pi}{6}$

$$Height = 221 + 221\sin\left(\frac{\pi}{6}\right) \approx 331.5$$

b. 5/12 of the way around

c. 9/10 of the way around

d. after completing 6/5 revolutions