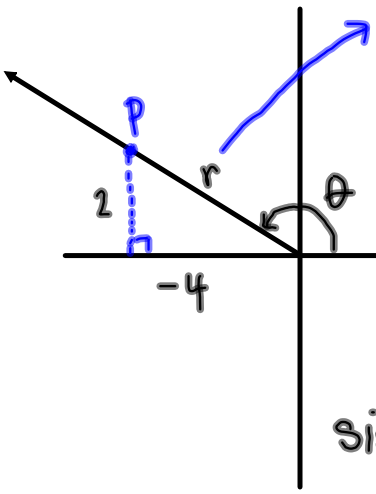
1. Find the exact simplified values of the primary trigonometric ratios for θ if the terminal arm of θ in standard position contains the point $P(-4, 2)$.



$r^2 = 2^2 + (-4)^2$

$= 4 + 16$

$= 20$

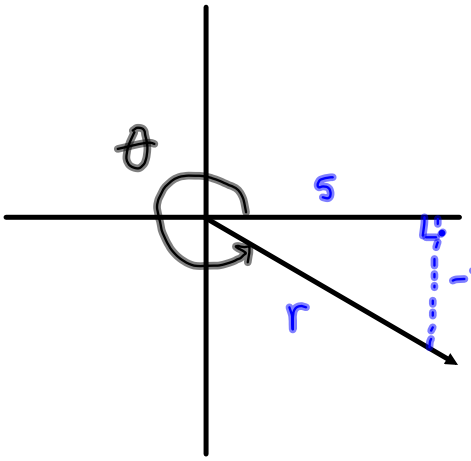
$r = \sqrt{20} = 2\sqrt{5}$

$\sin\theta = \frac{2}{2\sqrt{5}} = \frac{\sqrt{5}}{5}$

$\cos\theta = \frac{-4}{2\sqrt{5}} = \frac{-2\sqrt{5}}{5}$

$\tan\theta = \frac{2}{-4} = \frac{-1}{2}$

2. Determine the exact values of the remaining five trigonometric ratios for θ in quadrant IV if $\tan\theta = -3/5$



$r^2 = 5^2 + (-3)^2$

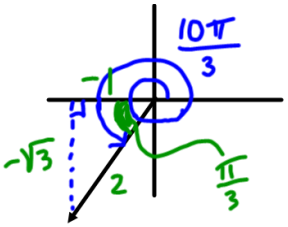
$= 34$

$r = \sqrt{34}$

$\sin\theta = \frac{-3}{\sqrt{34}} = \frac{-3\sqrt{34}}{34}$ $\quad \csc\theta = \frac{-\sqrt{34}}{3}$

$\cos\theta = \frac{5\sqrt{34}}{34}$ $\quad \sec\theta = \frac{\sqrt{34}}{5}$

$\tan\theta = \frac{-3}{5}$ $\quad \cot\theta = \frac{-5}{3}$

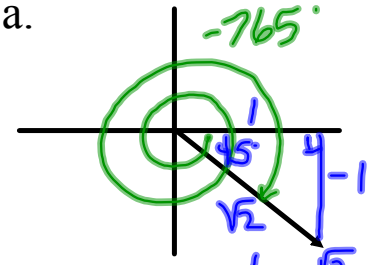
3 a. 

b. $4\pi/3$ c. $-2\pi/3$

d. $\sin\theta = -\frac{\sqrt{3}}{2}$ $\csc\theta = \frac{-2}{\sqrt{3}} = -\frac{2\sqrt{3}}{3}$

$\cos\theta = -\frac{1}{2}$ $\sec\theta = -2$

$\tan\theta = \sqrt{3}$ $\cot\theta = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

4 a. 

b. 315 °

c. -45 °

d. $\sin\theta = \frac{-1}{\sqrt{2}} = \frac{-\sqrt{2}}{2}$ $\csc\theta = -\sqrt{2}$

$\cos\theta = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$ $\sec\theta = \sqrt{2}$

$\tan\theta = -1$ $\cot\theta = -1$

p.170

1 b) 1/2 d) $\frac{3 - 2\sqrt{2}}{4}$ h) $\frac{\sqrt{6}}{2}$

2 a) $-1 - \sqrt{3}$ c) $\frac{8\sqrt{3} - 48}{33}$

p.127 # 1

a) C

b) D (periodic)

c) E

d) F (periodic)

p.127 # 2

a) amplitude = 6m (distance between the axel and the tip of windmill blade)

b) period = 18s (time to complete one revolution)

c) h = 8 (the axel is 8m above ground)

p.99

14 a. Period = 24 s

b. The period represents the time it takes the Ferris wheel to complete one revolution.

c. Equation of the sinusoidal axis: h = 10 (y = 10)

d. The sinusoidal axis represents the height of the axle. (how far the centre of the Ferris wheel is off the ground)

e. Amplitude = 8 m

f. The amplitude represents the radius of the Ferris wheel.

g. Height intercept = 10 m

h. The height intercept represents Derrick's initial height when timing starts.

i. There is no time intercept since there is no time while riding the Ferris wheel when Derrick will find himself at a height of 0 metres.