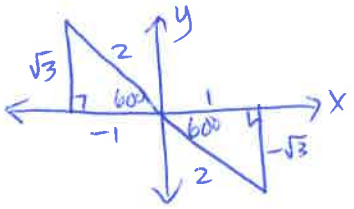
U5/L6 HW

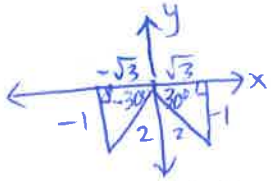
Handout Q's

1. a) $\tan x = -\frac{\sqrt{3}}{1}$ $\leftarrow \frac{y}{x}$



$x = 120°$ or $300°$

b) $\sin x = -\frac{1}{2}$



From Unit Circle or diagram

$x = 210°, 330°$

c) $\csc x = \frac{0}{1}$

$\sin x = \emptyset$

No soln

d) $\sec x = \frac{\sqrt{2}}{1}$

$\cos x = \frac{1}{\sqrt{2}}$ or $\frac{\sqrt{2}}{2}$

$\therefore x = 45°, 315°$

e) $\cot x = \frac{0}{1}$ or $\frac{0}{-1}$

$\tan x = \frac{1}{0}$ or $\emptyset$ $\tan x = \frac{-1}{0}$ or $\emptyset$

$\therefore x = 90°, 270°$

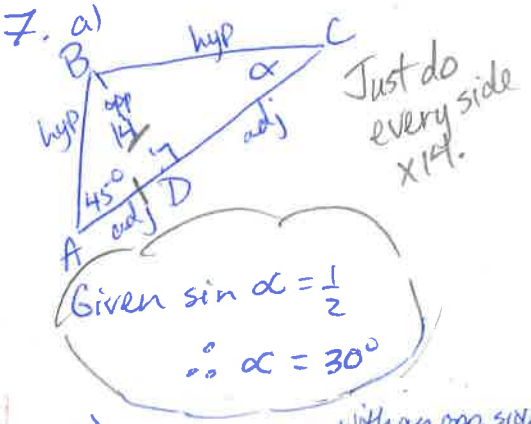
f) $\sin 2x = \frac{1}{\sqrt{2}}$

$\therefore 2x = 45°$ or $2x = 135°$

$x = 22.5°$ $x = 67.5°$

2. Text. p304 7, 9

7. a)



Just do every side ×14.

Given $\sin \alpha = \frac{1}{2}$

$\therefore \alpha = 30°$

7. b) $\angle A$

$\sin A = \frac{14}{14\sqrt{2}}$

$= \frac{1}{\sqrt{2}}$ or $\frac{\sqrt{2}}{2}$

$\cos A = \frac{\sqrt{2}}{2}$

$\tan A = 1$

$\angle DBC = 60°$

$\sin DBC = \frac{\sqrt{3}}{2}$

$\cos DBC = \frac{1}{2}$

$\tan DBC = \frac{\sqrt{3}}{2} \cdot \frac{2}{1}$

$= \sqrt{3}$

a) $\because \alpha = 30°$ with an opp side = 14 units and the opposite side usually equals 1

$\therefore$ all side lengths are mult by a factor of 14

$BC = 2(14)$ or 28 units

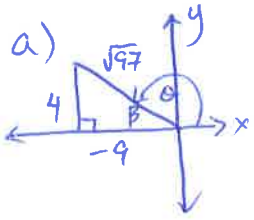
$AB = \sqrt{2}(14)$ or $14\sqrt{2}$ units

$CD = 14\sqrt{3}$ units

and $AC = AD + CD$

$= 14 + 14\sqrt{3}$ units

p. 304 #9. a)



$r = \sqrt{97}$ units

b) $\tan\beta = \frac{4}{9}$ ← use the +ve

Related acute ∠

$\beta \doteq 24°$

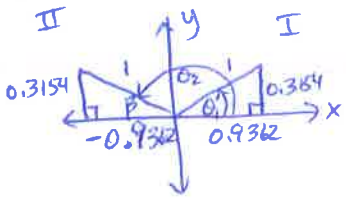
c) Principal ∠

$\theta = 180° - 24°$

$\theta = 156°$

#3 Text p. 301 9 c, d, 12

9.c) $\sin\theta = 0.3154$



$x^2 = r^2 - y^2$

$x^2 = 1^2 - (0.3154)^2$

$x \doteq \pm 0.9362$ units

In Quad I

$\theta = \sin^{-1} 0.3154$

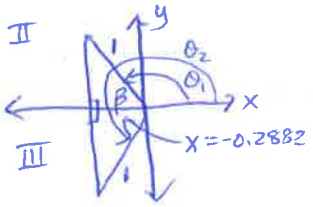
$\theta \doteq 18°$

In Quad II

$\theta = 180° - 18°$

$\theta \doteq 162°$

9.d) $\cos\theta = -0.2882$



Rel. Acute ∠

$\beta = \cos^{-1}(0.2882)$

$\beta \doteq 73°$

In Quad II

$\theta = 180° - 73°$

$\theta = 107°$

In Quad III

$\theta = 180° + 73°$

$\theta = 253°$

Incidentally,

$y^2 = r^2 - x^2$

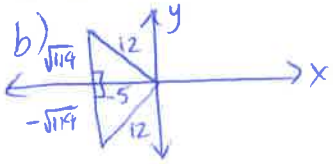
$y^2 = 1^2 - (-0.2882)^2$

$y \doteq \pm 0.9576$

12. $\cos\theta = -\frac{5}{12}$

a) The terminal arm could lie in quadrants II and III.

b)



$y^2 = r^2 - x^2$

$y^2 = 144 - 25$

$y = \pm\sqrt{119}$

In Quad II

$\cos\theta = -\frac{5}{12}$

$\sin\theta = \frac{\sqrt{119}}{12}$

$\tan\theta = \frac{\sqrt{119}}{5}$

In Quad III

$\cos\theta = -\frac{5}{12}$

$\sin\theta = -\frac{\sqrt{119}}{12}$

$\tan\theta = \frac{-\sqrt{119}}{-5}$ or $\frac{\sqrt{119}}{5}$