ASSIGNMENT #9
SOLUTIONS
APPLIED MATH
(201-943-DW)
DEC 2012

1. a. 0.28
   b. 0.93
   c. -1.41
   d. -1.92
   e. -78.38
   f. 184.00
   g. 7.09°
   h. 64.40°
   i. -50.98°
   j. 4.63°
   k. 76.62°
   l. -1.33°

2. $$\frac{3x - 4\sec 56^\circ}{9x} = \csc 78^\circ$$

$$\frac{3x - 7.153}{9x} = 1.022$$

$$3x - 7.153 = 9.2x$$

$$-7.153 = 6.2x$$

$$\boxed{x = -1.15}$$

2b. $$2x - \csc 22^\circ = \frac{x \cot 55^\circ - 5}{\cos 77^\circ - 7x}$$

$$2x - 2.669 = \frac{0.7x - 5}{0.225 - 7x}$$

$$(2x - 2.669)(0.225 - 7x) = 0.7x - 5$$

$$0.45x - 14x^2 - 0.6 + 18.68x = 0.7x - 5$$

$$-14x^2 + 18.43x + 4.4 = 0$$

QUADRATIC

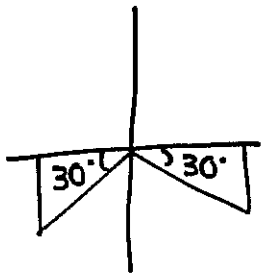
$$x = \frac{-18.43 \pm \sqrt{(18.43)^2 - 4(-14)(4.4)}}{2(-14)}$$

$$= \frac{-18.43 \pm 24.21}{-28}$$

SOLUTIONS

$$\boxed{-0.206 \ \& \ 1.522}$$

3. a. $\sin x = -0.5$



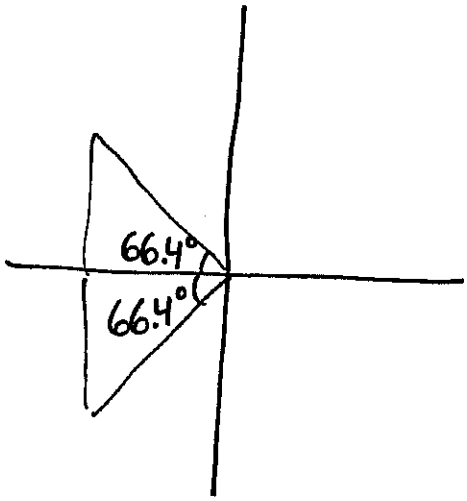
$\sin^{-1}(-0.5) = -30°$ $(330°)$

SOLUTIONS: $\boxed{210° \text{ \& } 330°}$

b. $\sec x = -2.5$

$\cos x = \frac{1}{-2.5}$

$\cos^{-1}\left(-\frac{1}{2.5}\right) = 113.58°$



SOLUTIONS:

$\boxed{113.58° \text{ \& } 246.42°}$

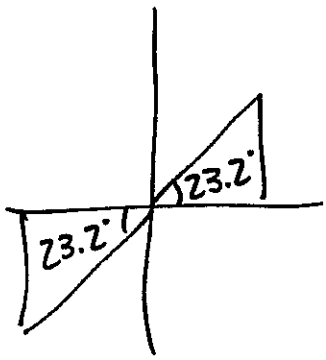
C. $3\cot x + 17 = 24$

$3\cot x = 7$

$\cot x = \frac{7}{3}$

$\tan x = \frac{3}{7}$

$\tan^{-1}\left(\frac{3}{7}\right) = 23.2°$



SOLUTIONS $\boxed{23.2° \text{ \& } 203.2°}$

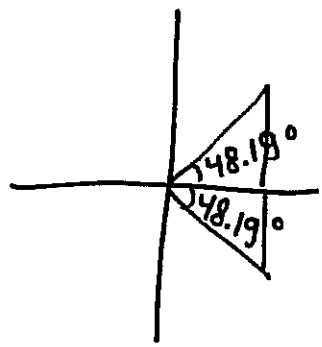
d. $6\cos^2 x = 4\cos x$

$6\cos^2 x - 4\cos x = 0$

$2(\cos x)(3\cos x - 2) = 0$

$\cos x = 0$ $\qquad$ $\cos x = 2/3$

$\cos^{-1}(2/3) = 48.19°$



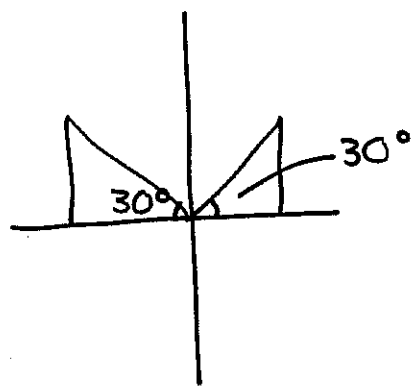
Solutions:

$90°, 270°, 48.19°, 311.81°$

e. $(\sin x)(2\sin x - 1) = 0$

$\sin x = 0$ $\qquad$ $\sin x = 1/2$

$x = 0°, 180°$ $\qquad$ $x = 30°, 150°$



Assignment 10

1. Use your calculator to find X. (All angles are in decimal degrees.) (ROUND TO THE NEAREST HUNDREDTH)

a. $X = \sin(16.17^\circ)$
b. $X = \cos(21.43^\circ)$
c. $X = \tan(-234.56^\circ)$
d. $X = \cot(-27.54^\circ)$
e. $X = \sec(-269.269^\circ)$
f. $X = \csc(0.3114^\circ)$
g. $X^\circ = \sin^{-1}(.1234)$
h. $X^\circ = \cos^{-1}(.4321)$
i. $X^\circ = \tan^{-1}(-1.234)$
j. $X^\circ = \cot^{-1}(12.34)$
k. $X^\circ = \sec^{-1}(4.321)$
l. $X^\circ = \csc^{-1}(-43.21)$

2. Solve the following equations for x. (ROUND TO NEAREST HUNDREDTH)

a. $\dfrac{3x - 4\sec(56^\circ)}{9x} = \csc(78^\circ)$

b. $(2x - \csc(22^\circ)) = \dfrac{(x\cot(55^\circ) - 5)}{(\cos(77^\circ) - 7x)}$

3. Solve the following equations for X where $0 \le X < 360^\circ$. The number of distinct solutions is given in brackets. (ROUND TO NEAREST HUNDREDTH)

a. $\sin(X) = -0.5$ (2)

b. $\sec(X) = -2.5$ (2)

c. $3\cot(X) + 17 = 24$ (2)

d. $6\cos^2(X) = 4\cos(X)$ (4)

e. $(\sin(X))(2\sin(X) - 1) = 0$ (3)