

# Test Review #2

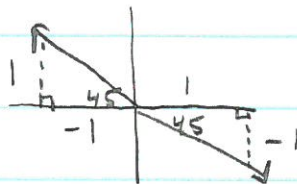
a.)  $3(\tan \theta - 2) = 2 \tan \theta - 7$

$$3 \tan \theta - 6 = 2 \tan \theta - 7$$

$$\tan \theta - 6 = -7$$

$$\tan \theta = -1$$

$$\frac{3\pi}{4}, \frac{7\pi}{4}$$



b.)  $2 \sin \theta - \sqrt{3} = \sin \theta$

$$\sin \theta - \sqrt{3} = 0$$

$$\sin \theta = \sqrt{3}$$

$\emptyset$

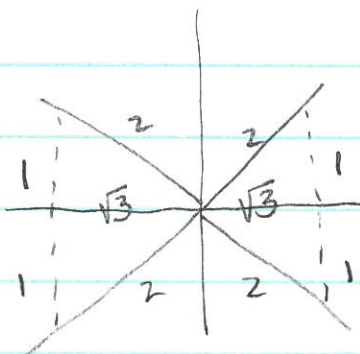
c.)  $3 \tan^2 - 1 = 0$

$$3 \tan^2 = 1$$

$$\tan^2 = \frac{1}{3}$$

$$\tan = \pm \frac{1}{\sqrt{3}}$$

$$\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$$



d.)  $4(\cot \theta + 1) = 2(\cot \theta + 2)$

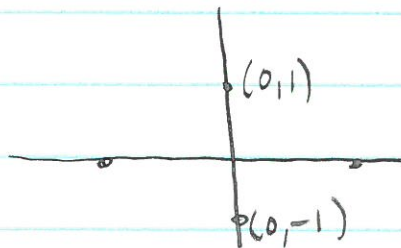
$$4 \cot \theta + 4 = 2 \cot \theta + 4$$

$$2 \cot \theta + 4 = 4$$

$$2 \cot \theta = 0$$

$$\cot \theta = 0$$

$$\frac{\pi}{2}, \frac{3\pi}{2}$$



$$2a.) \quad 3\csc\theta + 5 = 9 + \csc\theta$$

$$2\csc\theta + 5 = 9$$

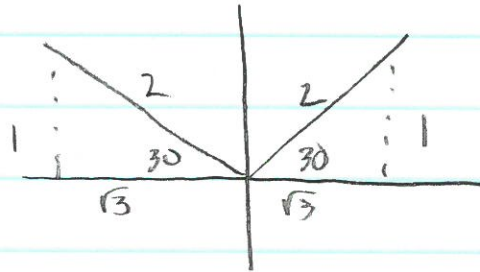
$$2\csc\theta = 4$$

$$\csc\theta = 2$$

$$(\sin\theta = \frac{1}{2})$$

$$\frac{\pi}{6} + n2\pi$$

$$\frac{5\pi}{6} + n2\pi$$

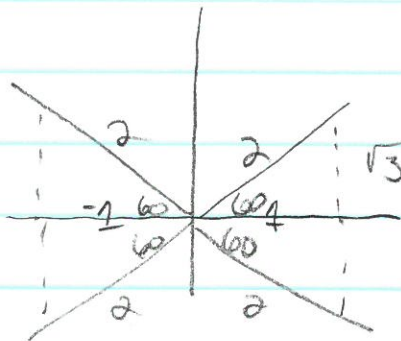


$$b.) \quad 4\cos^2\theta - 1 = 0$$

$$4\cos^2\theta = 1$$

$$\cos^2\theta = \frac{1}{4}$$

$$\cos\theta = \pm \frac{1}{2}$$



$$\frac{\pi}{3} + n2\pi$$

$$\frac{4\pi}{3} + n2\pi$$

$$\frac{2\pi}{3} + n2\pi$$

$$\frac{5\pi}{3} + n2\pi$$

$$3a.) \quad 4\sin^2\theta + 2\sin\theta = 0$$

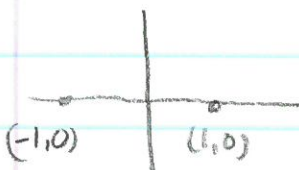
$$\sin\theta (4\sin\theta + 2) = 0$$

$$\sin\theta = 0$$

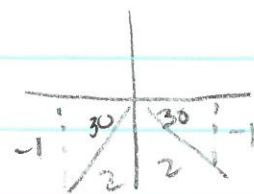
$$4\sin\theta + 2 = 0$$

$$4\sin\theta = -2$$

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



$$\boxed{0^\circ, 180^\circ}$$

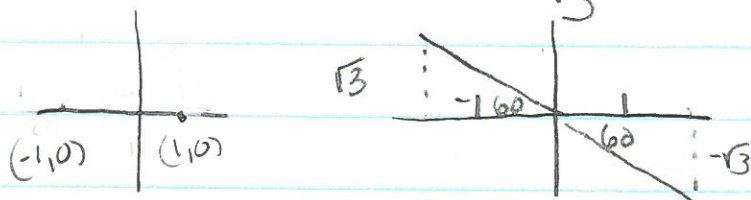


$$\boxed{210^\circ, 330^\circ}$$

$$3b.) \sqrt{3} \cot \theta + \tan \theta + \tan \theta = 0$$

$$\tan \theta (\sqrt{3} \cot \theta + 1) = 0$$

$$\tan \theta = 0 \quad \cot \theta = \frac{-1}{\sqrt{3}}$$



don't work

$$\cancel{0^\circ, 180^\circ}, 120^\circ, 300^\circ$$

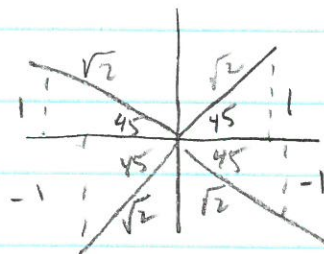
$$c.) 2 \sin^2 \theta - \tan \theta \cot \theta = 0$$

$$2 \sin^2 \theta - 1 = 0$$

$$2 \sin^2 \theta = 1$$

$$\sin^2 \theta = \frac{1}{2}$$

$$\sin \theta = \pm \frac{1}{\sqrt{2}}$$



$$45^\circ, 135^\circ, 225^\circ, 315^\circ$$

$$d.) 2 \cos^2 \theta = 1 - \cos \theta$$

$$2 \cos^2 \theta + \cos \theta - 1 = 0$$

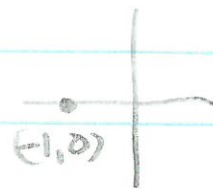
$$(2 \cos \theta - 1)(\cos \theta + 1) = 0$$

$$2 \cos \theta - 1 = 0$$

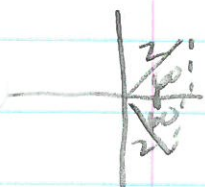
$$\cos \theta = \frac{1}{2}$$

$$60^\circ, 300^\circ$$

$$\cos \theta = -1$$



$$180^\circ$$



Short way

e)  $\cot^2 \theta = \csc \theta + 1$

$\sin^2 \theta \left( \frac{\cos^2 \theta}{\sin^2 \theta} \right) = \left( \frac{1}{\sin \theta} + 1 \right) \sin^2 \theta$

$\cos^2 \theta = \sin \theta + \sin^2 \theta$

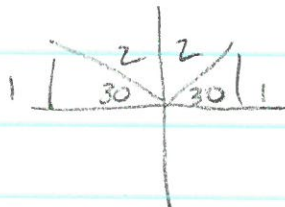
$-\sin^2 \theta = \sin \theta + \sin^2 \theta$

$0 = 2\sin^2 \theta + \sin \theta - 1$

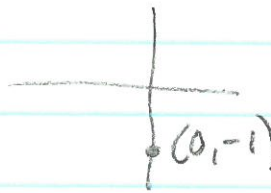
$(2\sin \theta - 1)(\sin \theta + 1)$

$2\sin \theta - 1 = 0 \quad \sin \theta + 1 = 0$

$\sin \theta = \frac{1}{2} \quad \sin \theta = -1$



$30^\circ, 150^\circ$



$270^\circ$

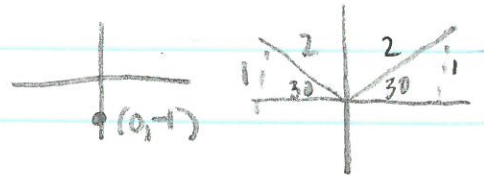
OR  $\csc^2 \theta - 1 = \csc \theta + 1$

$\csc^2 \theta - \csc \theta - 2 = 0$

$(\csc \theta + 1)(\csc \theta - 2) = 0$

$\csc \theta = -1 \quad \csc \theta = 2$

$270^\circ \quad 30^\circ, 150^\circ$



long way

f.)  $3 \cos 2\theta - 4 \cos^2 \theta + 2 = 0$

$3(2 \cos^2 \theta - 1) - 4 \cos^2 \theta + 2 = 0$

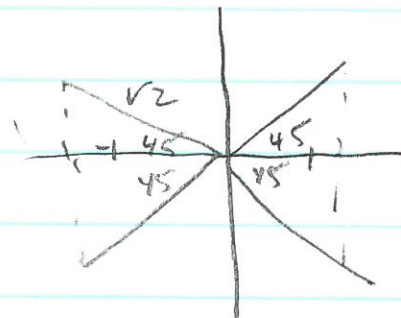
$6 \cos^2 \theta - 3 - 4 \cos^2 \theta + 2 = 0$

$2 \cos^2 \theta - 1 = 0$

$\cos^2 \theta = \frac{1}{2}$

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

$45^\circ, 135^\circ, 225^\circ, 315^\circ$

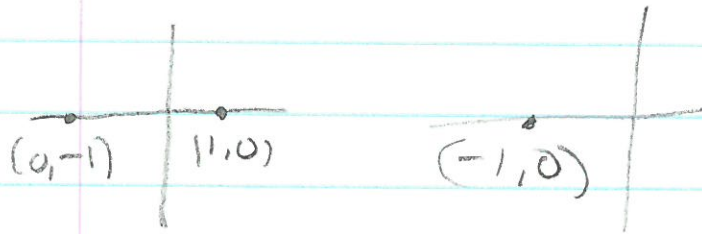


$$g.) \sin 2\theta + 2\sin\theta = 0$$

$$2\sin\theta \cos\theta + 2\sin\theta = 0$$

$$2\sin\theta (\cos\theta + 1) = 0$$

$$2\sin\theta = 0 \quad \cos\theta = -1$$



$$0^\circ, 180^\circ$$

$$h.) \sin^2\theta + 2 - \cos^2\theta = 3\sin\theta$$

$$\sin^2\theta + 2 - (1 - \sin^2\theta) = 3\sin\theta$$

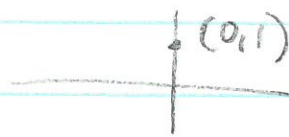
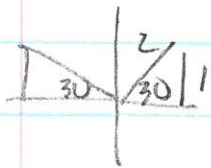
$$\sin^2\theta + 2 - 1 + \sin^2\theta = 3\sin\theta$$

$$2\sin^2\theta + 1 = 3\sin\theta$$

$$2\sin^2\theta - 3\sin\theta + 1 = 0$$

$$(2\sin\theta - 1)(\sin\theta - 1) = 0$$

$$\sin\theta = \frac{1}{2} \quad \sin\theta = 1$$



$$30^\circ, 150^\circ$$

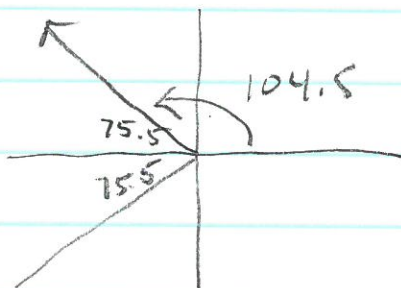
$$90^\circ$$

$$\textcircled{4} \quad 4 \cos \theta = -1$$

$$\cos \theta = -\frac{1}{4}$$

$$104.5$$

$$255.5$$



$$\textcircled{5} \quad \sin(4A + 10^\circ) = -\frac{\sqrt{3}}{2}$$

$$4A + 10^\circ = 240 + n360$$

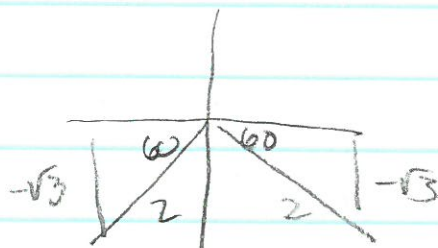
$$4A = 230 + n360$$

$$A = 57.5^\circ + n90^\circ$$

$$4A + 10^\circ = 300 + n360$$

$$4A = 290 + n360$$

$$A = 72.5^\circ + n90^\circ$$



$$\text{6a.)} \quad 3 \sin^2 \theta - 7 \sin \theta - 3 = 0$$

$$\sin \theta = \frac{7 \pm \sqrt{7^2 - 4(3)(-3)}}{2(3)}$$

$$= \frac{7 \pm \sqrt{95}}{6}$$

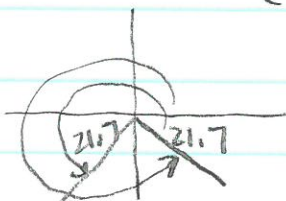
$$\sin \theta = 2.70326$$

$\emptyset$

$$\sin \theta = -0.369924$$

$(-21.7)$

$$338.3^\circ, 201.7^\circ$$



$$(6) b.) 2 \tan \theta (\tan \theta + 1) = 3$$

$$2 \tan^2 \theta + 2 \tan \theta = 3$$

$$2 \tan^2 \theta + 2 \tan \theta - 3 = 0$$

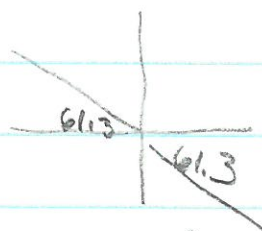
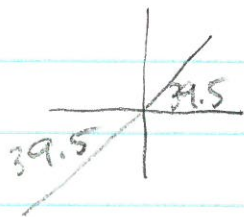
$$\tan \theta = \frac{-2 \pm \sqrt{2^2 - 4(2)(-3)}}{2(2)}$$

$$\tan \theta = \frac{-2 \pm \sqrt{28}}{4}$$

$$\tan \theta = .822876 \quad \tan \theta = -1.82288 \quad (-61.3)$$

$$39.5$$

$$219.5$$



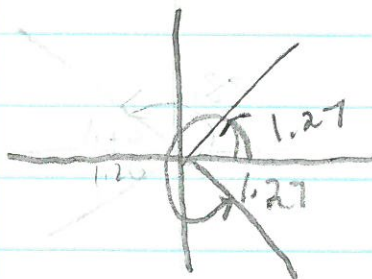
$$298.7^\circ$$

$$118.7^\circ$$

$$(7) -3 \sec \theta + 8 = -2$$

$$-3 \sec \theta = -10$$

$$\sec \theta = \frac{10}{3}$$



$$1.27 + n6.28$$

$$5.01 + n6.28$$