Solving Trigonometric Equations

Key
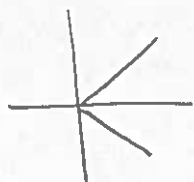
Solve each of the following equations where $0° \leq \theta < 360°$.

a) $10cos\theta = 5$

$$cos\theta = \frac{5}{10}$$

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

$$\theta_R = 60°$$

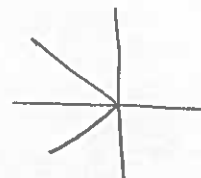

$$\theta = 60°, 300°$$

b) $\sqrt{3} + 2cos\theta = 0$

$$\frac{2cos\theta}{2} = \frac{-\sqrt{3}}{2}$$

$$cos\theta = \frac{-\sqrt{3}}{2}$$

$$\theta_R = 30°$$

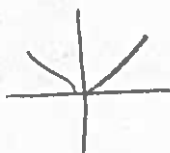$$\theta = 150°, 210°$$

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

$$2sin\theta = 1$$

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

$$\theta_R = 30°$$

$$\theta = 30°, 150°$$

d) $2sin\theta + 3 = 3 - \sqrt{2}$

$$2sin\theta = 3 - 3 - \sqrt{2}$$

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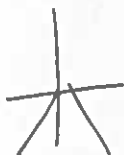
$$sin\theta = \frac{-\sqrt{2}}{2}$$

$$\theta_R = 45°$$

$$\theta = 225°, 315°$$

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

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

$$\theta_R = 60°$$

$$\theta = 240°, 300°$$

f) $4cos\theta - 5 = -7$

$$4cos\theta = -2$$

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

$$\theta_R = 60°$$

$$\theta = 120°, 240°$$