

4.2 Practice Sheet

1a)

$$x^2 + y^2 = r^2$$

$$x^2 + y^2 = 16$$

2. $x^2 + y^2 = 1$

$$\left(-\frac{5}{13}\right)^2 + \left(\frac{12}{13}\right)^2 = 1$$

Solving Trig Equations By Factoring

① Binomial Factoring

$$\sin^2 x - \sin x = 0, \quad 0 \leq x < 2\pi$$

$$\sin x (\sin x - 1) = 0$$

$$\begin{array}{l} \sin x = 0 \\ x = 0 + \pi \end{array} \left\{ \begin{array}{l} \sin x - 1 = 0 \\ \sin x = 1 \\ x = \frac{\pi}{2} \end{array} \right.$$

2. Difference of Squares Factoring

$$\sec^2 x - 1 = 0$$

$$(\sec x - 1)(\sec x + 1) = 0$$

$$\begin{array}{l} \sec x = 1 \\ \cos x = 1 \\ x = 0 \end{array} \quad \left\{ \begin{array}{l} \sec x = -1 \\ \cos x = -1 \\ x = \pi \end{array} \right.$$

$$\begin{array}{l} x = 0 \pm 2\pi n, n \in \mathbb{I} \\ x = \pi \pm 2\pi n, n \in \mathbb{I} \end{array} \quad \left. \vphantom{\begin{array}{l} x = 0 \pm 2\pi n, n \in \mathbb{I} \\ x = \pi \pm 2\pi n, n \in \mathbb{I} \end{array}} \right\} x = 0 \pm \pi n, n \in \mathbb{I}$$

3. Factoring a trinomial by Decomposition

$$\tan^2 \theta - 5 \tan \theta + 4 = 0, 0 \leq \theta < 2\pi$$

$$m = \tan \theta$$

$$m^2 - 5m + 4 = 0$$

$$\text{add} \rightarrow -5$$

$$\text{mult} \rightarrow 4$$

$$\hline -1 \quad -4$$

$$(m-1)(m-4) = 0$$

$$m=1 \quad m=4$$

$$\tan \theta = 1 \quad \tan \theta = 4 \quad * \text{calculator in radian mode}$$

$$\theta = \frac{\pi}{4}, \frac{5\pi}{4}$$

$$\theta = 1.326 \\ \theta = 4.467$$



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