

Assignment 2: 4.4-4.5 Solving Trig Equations

1. Solve each of the following equations given the domain $0^\circ \leq \theta < 360^\circ$.

a) $\sin \theta = -\frac{1}{2}$

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

c) $\tan \theta = 0$

d) $\csc \theta = -\sqrt{2}$

e) $\cot \theta = \frac{\sqrt{3}}{3}$

f) $\sec \theta = 1.064$

2. Solve each of the following equations given the domain $0 \leq \theta < 2\pi$.

a) $\sin \theta = \frac{\sqrt{2}}{2}$

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

c) $\tan \theta = 1$

d) $\cot \theta$ is undefined

e) $\csc \theta = -2$

f) $\sec \theta = \frac{2\sqrt{3}}{3}$

3. If $\tan \theta = \frac{5}{2}$, where $0 \leq \theta < 2\pi$, determine the largest positive value of θ , to the nearest tenth.

4. Algebraically determine the exact solutions for $6 \cos \theta + 3 = 0$, where $-2\pi \leq \theta < 2\pi$.

5. Consider the equation: $\sin^2 \theta - \sin \theta = 0$. Algebraically determine the exact solutions where $0^\circ \leq \theta < 360^\circ$.

6. Determine the exact roots of each equation algebraically over the given domain.

a) $4 \cos^2 \beta - 1 = 0$

$0^\circ \leq \beta \leq 360^\circ$

b) $3 \tan \theta + 1 = \tan \theta - 1$

$-2\pi \leq \theta < 2\pi$

c) $4 \cos^2 \theta + 2 \cos \theta - 2 = 0$

$0 \leq \theta < 2\pi$

d) $\sin \theta = 0.91$

approximate roots $0 \leq \theta < 2\pi$