

Solutions - Lecture 9 - Homework

Question 1.

(a)

$$\sin 30^\circ = \frac{1}{2} \quad \cos 30^\circ = \frac{\sqrt{3}}{2} \quad \tan 30^\circ = \frac{1}{\sqrt{3}}$$

$$\csc 30^\circ = 2 \quad \sec 30^\circ = \frac{2}{\sqrt{3}} \quad \cot 30^\circ = \sqrt{3}$$

(b)

$$\sin 225^\circ = -\frac{1}{\sqrt{2}} \quad \cos 225^\circ = -\frac{1}{\sqrt{2}} \quad \tan 225^\circ = 1$$

$$\csc 225^\circ = -\sqrt{2} \quad \sec 225^\circ = -\sqrt{2} \quad \cot 225^\circ = 1$$

(c)

$$\sin -240^\circ = \frac{\sqrt{3}}{2} \quad \cos -240^\circ = -\frac{1}{2} \quad \tan -240^\circ = -\sqrt{3}.$$

$$\csc -240^\circ = \frac{2}{\sqrt{3}} \quad \sec -240^\circ = -2 \quad \cot -240^\circ = -\frac{1}{\sqrt{3}}.$$

(d)

$$\sin 330^\circ = -\frac{1}{2} \quad \cos 330^\circ = \frac{\sqrt{3}}{2} \quad \tan 330^\circ = -\frac{1}{\sqrt{3}}$$

$$\csc 330^\circ = -2 \quad \sec 330^\circ = \frac{2}{\sqrt{3}} \quad \cot 330^\circ = -\sqrt{3}$$

Question 2.

(a) $\mathbf{P}\left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$

(b) $\mathbf{Q}(-1, \sqrt{3})$

(c) $\mathbf{T}(-2\sqrt{3}, -2)$

(d) $\mathbf{M}(0, -3)$

(e) $\mathbf{G}\left(\frac{3\sqrt{3}}{2}, -\frac{3}{2}\right)$

Question 3.

a) $\theta_1 = 330^\circ$

b) $\theta_2 = 330^\circ$

c) $\theta_3 = 300^\circ$

d) $\theta_4 = 345.96^\circ$

Question 4.

a) $\lambda_1 = 135^\circ$

b) $\lambda_2 = 120^\circ$

c) $\lambda_3 = 150^\circ$

d) $\lambda_4 = 123.69^\circ$

Question 5.

(a) $\mathbf{P}(8, 330^\circ)$

(b) $\mathbf{Q}(\sqrt{2}, 135^\circ)$

(c) $\mathbf{T}(3\sqrt{5}, 206.56^\circ)$

(d) $\mathbf{M}(6, 300^\circ)$