

TRIGONOMETRY – PRACTICE EXAM 3 (Solutions) – Chapters 6 - 7

1. a) 1.9949 (radians) b) 0.1377 (radians)

2. a) $-\frac{3}{5}$ b) $\frac{6\sqrt{u^2-9}}{u^2-18}$

3. a) $\theta = \left\{ \frac{\pi}{3}, \frac{3\pi}{4}, \frac{4\pi}{3}, \frac{7\pi}{4} \right\}$ b) $\theta = \{1.9948, 5.8591\}$ (radians)

4. a) $\theta = \{75^\circ + 180^\circ n, 105^\circ + 180^\circ n\} \Leftrightarrow \theta = \left\{ \frac{5\pi}{12} + \pi n, \frac{7\pi}{12} + \pi n \right\}$, where n is an integer

b) $\theta = \{22.5^\circ + 180^\circ n, 112.5^\circ + 180^\circ n\} \Leftrightarrow \theta = \left\{ \frac{\pi}{8} + \pi n, \frac{5\pi}{4} + \pi n \right\}$, where n is an integer

5. a) $y = \frac{\pi}{3} + \frac{\sqrt{3}}{2} \Leftrightarrow y = \frac{2\pi + 3\sqrt{3}}{6}$ b) $x = 0$

6. a) $X = 49^\circ 40'$, $y = 16.1$ cm, $z = 25.8$ cm b) $X = 60.91^\circ$, $x = 98.25$ yd, $Y = 30.39^\circ$

7. a) $Q = 106.8^\circ$, $R = 44.9^\circ$, $r = 2.83$ in b) $P = 24^\circ$, $Q = 31^\circ$, $R = 125^\circ$

8. a) $\langle 7, -41 \rangle$ or $7\mathbf{i} - 41\mathbf{j}$ b) 200 c) $3\sqrt{10}$ d) 57.337° e) No, since $\mathbf{u} \cdot \mathbf{v} = 50 \neq 0$

9. a) $\mathbf{w} = \langle 10, -10\sqrt{3} \rangle$ or $\mathbf{w} \approx \langle 10, -17.3205 \rangle$ b) Magnitude $|\mathbf{m}| = \sqrt{13} \approx 3.6056$, Direction $\theta = 123.69^\circ$

10. a) 22.0° b) Distance from port = 7.5 mi, Bearing from port = 124.2°