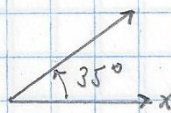


Homework #4A

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Lesson 4A.1:

1) a) $755^\circ - 360 = 395 - 360 = 35^\circ - 360 = -325^\circ$



b) $-200^\circ + 360 = 160^\circ$, $-200^\circ - 360 = -560^\circ$



2) a) $\frac{165^\circ}{1} \left(\frac{\pi}{180^\circ} \right) = \frac{11\pi}{12}$ b) $\frac{-210^\circ}{1} \left(\frac{\pi}{180^\circ} \right) = -\frac{7\pi}{6}$

3) a) $\frac{15\pi}{12} \left(\frac{180^\circ}{\pi} \right) = 225^\circ$ b) $-\frac{13\pi}{6} \left(\frac{180^\circ}{\pi} \right) = -390^\circ$

4) a) $\frac{67\pi}{16} - 2\pi = \frac{35\pi}{16} - 2\pi = \frac{3\pi}{16} - 2\pi = -\frac{29\pi}{16}$

b) $-\frac{24\pi}{11} + 2\pi = -\frac{2\pi}{11} + 2\pi = \frac{20\pi}{11}$

Lesson 4A.4:

5) a) $\theta = 585^\circ - 360^\circ = 225^\circ \rightarrow (x, y) = \left(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2} \right)$

b) $\theta = -\frac{17\pi}{6} + 2\pi = -\frac{5\pi}{6} + 2\pi = \frac{7\pi}{6} \rightarrow (x, y) = \left(-\frac{\sqrt{3}}{2}, -\frac{1}{2} \right)$

Lesson 4A.5:

6) a) $\cos 315^\circ = \frac{\sqrt{2}}{2}$ b) $-150^\circ + 360^\circ = 210^\circ$, $\sin(-150^\circ) = \sin 210^\circ = -\frac{1}{2}$

c) $-570^\circ + 360 = -210 + 360 = 150^\circ$, $\cos(-570^\circ) = \cos(150^\circ) = -\frac{\sqrt{3}}{2}$

d) $\tan 330^\circ = \frac{\sin 330^\circ}{\cos 330^\circ} = \frac{-1/2}{\sqrt{3}/2} = -\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$

7) a) $\sin\left(\frac{4\pi}{3}\right) = -\frac{\sqrt{3}}{2}$ b) $\frac{15\pi}{4} - 2\pi = \frac{7\pi}{4}$, $\cos\left(\frac{15\pi}{4}\right) = \cos\left(\frac{7\pi}{4}\right) = \frac{\sqrt{2}}{2}$

c) $-\frac{7\pi}{6} + 2\pi = \frac{5\pi}{6}$, $\sin\left(-\frac{7\pi}{6}\right) = \sin\left(\frac{5\pi}{6}\right) = \frac{1}{2}$

d) $\tan\left(\frac{2\pi}{3}\right) = \frac{\sin\left(\frac{2\pi}{3}\right)}{\cos\left(\frac{2\pi}{3}\right)} = \frac{\sqrt{3}/2}{-1/2} = -\sqrt{3}$

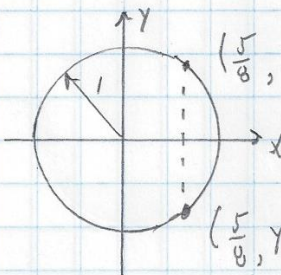
Homework #4A

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Lesson 4A.6:

8) θ in QIV, $\cos \theta = \frac{7}{25}$. $\cos^2 \theta + \sin^2 \theta = 1$, $\sin^2 \theta = 1 - \cos^2 \theta = 1 - \left(\frac{7}{25}\right)^2 = \frac{576}{625}$,

$$\sin \theta = -\sqrt{\frac{576}{625}} = -\frac{24}{25} \quad \tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{-24/25}{7/25} = -\frac{24}{7}$$

9)  $\left(\frac{5}{8}, y\right) = \left(\frac{5}{8}, \frac{\sqrt{39}}{8}\right)$ QI $\left(\frac{5}{8}\right)^2 + y^2 = 1$, $y^2 = 1 - \left(\frac{5}{8}\right)^2 = \frac{39}{64}$
 $y = \pm \sqrt{\frac{39}{64}} = \pm \frac{\sqrt{39}}{8}$
 $\left(\frac{5}{8}, y\right) = \left(\frac{5}{8}, -\frac{\sqrt{39}}{8}\right)$ QIV

10) $r = 10$, $\theta = \frac{5\pi}{3}$ $\cos \theta = \frac{x}{r}$, $x = r \cos \theta = 10 \cos\left(\frac{5\pi}{3}\right) = 10\left(\frac{1}{2}\right) = 5$
 $\sin \theta = \frac{y}{r}$, $y = r \sin \theta = 10 \sin\left(\frac{5\pi}{3}\right) = 10\left(-\frac{\sqrt{3}}{2}\right) = -5\sqrt{3}$

11) θ in QIV $\rightarrow x > 0$ and $y < 0$: $\tan \theta = -\frac{15}{8} = \frac{y}{x} \Rightarrow x = 8, y = -15$

$$r = \sqrt{x^2 + y^2} = \sqrt{8^2 + (-15)^2} = 17, \quad \sin \theta = \frac{y}{r} = -\frac{15}{17} \quad \cos \theta = \frac{x}{r} = \frac{8}{17}$$

Lesson 4A.8:

12) a) $y = \sin(13x)$, $p = \frac{2\pi}{b} = \frac{2\pi}{13}$

b) $y = \sin\left(\frac{\pi x}{20}\right)$, $p = \frac{2\pi}{b} = \frac{2\pi}{\frac{\pi}{20}} = \frac{2\pi}{1} \cdot \frac{20}{\pi} = 40$

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$$13) \quad y = 4 \sin \left[\frac{\pi}{4} (x - 2) \right] + 6 \quad p = \frac{2\pi}{b} = \frac{2\pi}{\frac{\pi}{4}} = \frac{2\pi}{1} \cdot \frac{4}{\pi} = 8$$

