

Homework 15 Math 48C Mitchell Schoenbrun
 10.1 P. 690 2-32 Even 36, 40, 42, 44, 50, 52

<p>2.</p> $\tan(\theta)\cos(\theta) = \frac{\sin(\theta)}{\cos(\theta)}\cos(\theta) = \sin(\theta)$	<p>4.</p> $\frac{\sec(x)}{\tan(x)} = \frac{1/\cos(x)}{\sin(x)/\cos(x)} = \frac{1}{\sin(x)} = \csc(x)$
<p>6.</p> $\frac{\cos(\theta)}{\tan(\theta)} \cdot \sin(\theta) = \frac{\cos(\theta)\sin(\theta)}{\sin(\theta)/\cos(\theta)} = \cos^2(\theta)$	<p>8.</p> $\cot(\theta)\sin(\theta) = \frac{\cos(\theta)}{\sin(\theta)}\sin(\theta) = \cos(\theta) = .75$ <p>$\theta \approx .723, 5.56$ or $41.4^\circ, 318.6^\circ$</p>
<p>10.</p> $-2\sec(\alpha) = \csc(\alpha) \rightarrow \frac{-2}{\cos(\alpha)} = \frac{1}{\sin(\alpha)}$ $\frac{\sin(\alpha)}{\cos(\alpha)} = -\frac{1}{2} \rightarrow \tan(\alpha) = -\frac{1}{2}$ <p>$\alpha \approx 2.68, 5.82$ or $153^\circ, 333^\circ$</p>	<p>12.</p> $\cos(-\theta) = \cos(\theta)$
<p>14.</p> $\tan(-\beta)\cos(-\beta) = \sin(-\beta) = -\sin(\beta)$	<p>16.</p> $\csc^2(-x) = (-\csc(x))^2 = \csc^2(x)$
<p>18.</p> $\sin(-\theta) = .73 \rightarrow -\sin(\theta) = .73 \rightarrow \sin(\theta) = -.73$ <p>$\theta \approx .818, 5.46$ or $46.9^\circ, 313.1^\circ$</p>	<p>20.</p> $-3\left(\frac{\sin(-\theta)}{\cos(-\theta)}\right) = 4.12 \rightarrow \frac{-\sin(\theta)}{\cos(\theta)} = \frac{4.12}{3}$ $\frac{\sin(\theta)}{\cos(\theta)} = -\frac{4.12}{3} \rightarrow \tan(\theta) = -\frac{4.12}{3}$ <p>$\theta \approx 2.20, 5.34$ or $126^\circ, 306^\circ$</p>
<p>22.</p> $\sin\left(\frac{\pi}{2} - \theta\right) = \cos(\theta)$	<p>24.</p> $\cos(90^\circ - \theta)\sec(\theta) = \sin(\theta)\frac{1}{\cos(\theta)} = \tan(\theta)$
<p>26.</p> $\frac{\sin\left(\frac{\pi}{2} - \theta\right)}{\cos\left(\frac{\pi}{2} - \theta\right)} = \frac{\cos(\theta)}{\sin(\theta)} = \csc(\theta)$	<p>28.</p> $\cos\left(\frac{\pi}{2} - \theta\right) = -0.61 \rightarrow \sin(\theta) = -0.61$ <p>$\theta \approx .656, 5.627$ or $37.59^\circ, 322.41^\circ$</p>
<p>30.</p> $-1 = \cos(\theta)\cot\left(\frac{\pi}{2} - \theta\right) \rightarrow \cos(\theta)\tan(\theta) = -1$ $\sin(\theta) = -1$ <p>$\theta = \frac{3\pi}{2}$ or 270°</p>	<p>32.</p> $\cos^2\left(\frac{\pi}{5}\right) \approx .655 \quad \cos\left(\frac{\pi}{5}\right)^2 \approx 1.165$ $\cos^2\left(\frac{\pi}{5}\right) \neq \cos\left(\frac{\pi}{5}\right)^2$

<p>36.</p> $\sec^2(\theta) - \tan^2(\theta) = \frac{1}{\cos^2(\theta)} - \frac{\sin^2(\theta)}{\cos^2(\theta)} =$ $\frac{1 - \sin^2(\theta)}{\cos^2(\theta)} = \frac{\cos^2(\theta)}{\cos^2(\theta)} = 1$	<p>40.</p> $[\csc(\theta) + \cot(\theta)][\csc(\theta) - \cot(\theta)] =$ $\csc^2(\theta) - \cot^2(\theta) = \frac{1}{\sin^2(\theta)} - \frac{\cos^2(\theta)}{\sin^2(\theta)} =$ $\frac{1 - \cos^2(\theta)}{\sin^2(\theta)} = \frac{\sin^2(\theta)}{\sin^2(\theta)} = 1$
<p>42.</p> $[1 - \sin^2(x)][\sec(x)] = -0.1$ $[\cos^2(x)]\left[\frac{1}{\cos(x)}\right] = -0.1$ $\cos(x) = -0.1$ $x \approx 1.67, 4.61 \text{ or } 95.7^\circ, 264.3^\circ$	<p>44.</p> $\sin(w) = 2.7[1 - \cos^2(w)]$ $\sin(w) = 2.7[\sin^2(w)]$ $\sin(w) = \frac{1}{2.7}$ $w \approx .379, 5.90 \text{ or } 21.7^\circ, 338.3^\circ$
<p>50.</p> $2\sin^2(\theta) - \sin(\theta) = 1$ $2\sin^2(\theta) - \sin(\theta) - 1 = 0$ $(2\sin(\theta) - 1)(\sin(\theta) + 1) = 0$ $\sin(\theta) = -\frac{1}{2} \text{ or } \sin(\theta) = -1$ $\theta = \frac{7\pi}{6}, \frac{11\pi}{6}, \frac{3\pi}{2} \text{ or } 210^\circ, 330^\circ, 270^\circ$	<p>52.</p> $3\sin^2(\theta) - 2\cos(\theta) = 3\cos(\theta) + 1$ $3(1 - \cos^2(\theta)) = 5\cos(\theta) + 1$ $3 - 3\cos^2(\theta) = 5\cos(\theta) + 1$ $3\cos^2(\theta) + 5\cos(\theta) - 2 = 0$ $(3\cos(\theta) + 1)(\cos(\theta) - 2)$ $\cos(\theta) = 2 \text{ (Impossible)}$ $\cos(\theta) = -\frac{1}{3}$ $\theta \approx 1.91, 4.37 \text{ or } 109^\circ, 250^\circ$