Handout 17 Solutions

1)

$$\sec^2(\theta)\left[1-\sin^2(\theta)\right]=\frac{1}{\cos^2(\theta)}\cos^2(\theta)=1$$

2)

$$\frac{\sec^2(\theta)-1}{\sin^2(\theta)}=\frac{\frac{1}{\cos^2(\theta)}-1}{\sin^2(\theta)}=\frac{\frac{1-\cos^2(\theta)}{\cos^2(\theta)}}{\sin^2(\theta)}=\frac{\frac{\sin^2(\theta)}{\cos^2(\theta)}}{\sin^2(\theta)}=\frac{1}{\cos^2(\theta)}=\sec^2(\theta)$$

3)

$$\left[\sec(\theta)+1\right]\left[\sec(\theta)-1\right]=\sec^2(\theta)-1=\tan^2(\theta)$$

4)

$$\frac{\cos(\theta)}{1-\sin^2(\theta)}+2=-1\rightarrow\frac{\cos(\theta)}{\cos^2(\theta)}=-3\rightarrow\frac{1}{\cos(\theta)}=-3$$

$$\cos(\theta)=-\frac{1}{3}$$

$$\theta=70.5°,109.5°$$

5)

$$1-\sin^2(\theta)\cot^2(\theta)=0.8$$

$$1-\sin^2(\theta)\cot^2(\theta)=1-\sin^2(\theta)\frac{\cos^2(\theta)}{\sin^2(\theta)}=1-\sin^2(\theta)=\cos^2(\theta)$$

$$\cos^2(\theta)=0.8$$

$$\cos(\theta)=\pm\sqrt{0.8}$$

$$\theta=26.6°,153.4°$$