Homework #52 **Answers**

From Houghton-Mifflin Precalculus: 3rd Edition

p381-382:

3) $\sec\theta = \sqrt{2}$, $\sin\theta = -\sqrt{2}/2$
$\cos\theta = \sqrt{2}/2$, $\csc\theta = -\sqrt{2}$, $\tan\theta = -1$, $\cot\theta = -1$

4) $\tan x = \sqrt{3}/3$, $\cos x = -\sqrt{3}/2$
$\sin x = -\frac{1}{2}$, $\csc x = -2$, $\sec x = -2/\sqrt{3}$, $\cot x = \sqrt{3}$

26) $\sin^2 x(\csc^2 x - 1) = 1 - \sin^2 x = \cos^2 x$ (c)

29) $\frac{\sec^2 x - 1}{\sin^2 x} = \frac{\tan^2 x}{\sin^2 x} = \frac{\sin^2 x}{\cos^2 x} \cdot \frac{1}{\sin^2 x} = \frac{1}{\cos^2 x} = \sec^2 x$ (e)

64) $\sec^2 x \tan^2 x + \sec^2 x = \sec^2 x(\tan^2 x + 1) = \sec^2 x(\sec^2 x) = \sec^4 x$

67) $\tan^4 x + 2\tan^2 x + 1 = (\tan^2 x + 1)(\tan^2 + 1) = (\sec^2 x)(\sec^2 x) = \sec^4 x$

77) $\frac{\cos x}{1 + \sin x} + \frac{1 + \sin x}{\cos x} = \frac{\cos^2 x}{\cos x(1 + \sin x)} + \frac{(1 + \sin x)^2}{\cos x(1 + \sin x)} =$
$\frac{\cos^2 x + 1 + 2\sin x + \sin^2 x}{\cos x(1 + \sin x)} = \frac{1 + 1 + 2\sin x}{\cos x(1 + \sin x)} = \frac{2 + 2\sin x}{\cos x(1 + \sin x)} =$
$\frac{2(1 + \sin x)}{\cos x(1 + \sin x)} = \frac{2}{\cos x} = 2\sec x$

80) $\frac{5}{\tan x + \sec x} \cdot \frac{\tan x - \sec x}{\tan x - \sec x} = \frac{5(\tan x - \sec x)}{\tan^2 x - \sec^2 x} = \frac{5(\tan x - \sec x)}{-1}$
$= -5(\tan x - \sec x)$

91) $\sqrt{25 - x^2} = \sqrt{25 - (5\sin\theta)^2} = \sqrt{25 - 25\sin^2\theta} = \sqrt{25(1 - \sin^2\theta)} =$
$\sqrt{25\cos^2\theta} = 5\cos\theta$