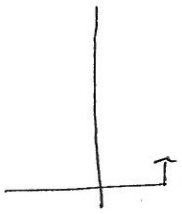
Hw #5.1-2

(4) $\cot(-x)\sin x = -\cos x$

$-\cot x \sin x$

$-\frac{\cos x}{\sin x}\cdot \sin x$

$-\cos x$



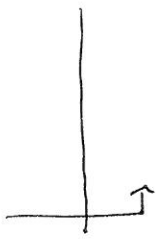
(8) $\csc x - \csc x \cos^2 x = \sin x$

$\csc x(1-\cos^2 x)$

$\csc x \sin^2 x$

$\frac{1}{\sin x}\cdot \sin^2 x$

$\sin x$



(12) $\tan\theta + \cot\theta = \sec\theta\csc\theta$

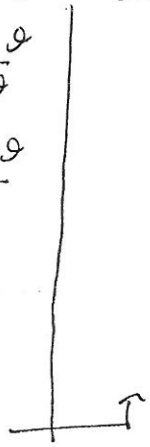
$\frac{\sin\theta}{\cos\theta} + \frac{\cos\theta}{\sin\theta}$

$\frac{\sin^2\theta + \cos^2\theta}{\cos\theta\sin\theta}$

$\frac{1}{\cos\theta\sin\theta}$

$\frac{1}{\cos\theta}\cdot\frac{1}{\sin\theta}$

$\sec\theta\csc\theta$



(16) $\cos^2\theta(1+\tan^2\theta) = 1$

$\cos^2\theta + \sec^2\theta$

$\cos^2\theta\cdot\frac{1}{\cos^2\theta}$

1

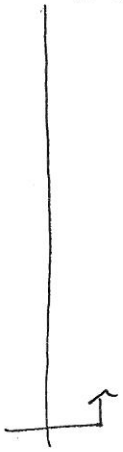
(20) $\frac{\sec^2 t}{\tan t} = \sec t\csc t$

$\frac{\frac{1}{\cos^2 t}}{\frac{\sin t}{\cos t}}$

$\frac{1}{\cos^2 t}\cdot\frac{\cos t}{\sin t}$

$\frac{1}{\cos t}\cdot\frac{1}{\sin t}$

$\sec t\ \csc t$



(24) $\frac{1-\sin\theta}{\cos\theta} = \sec\theta - \tan\theta$

$\frac{1}{\cos\theta} - \frac{\sin\theta}{\cos\theta}$

$\frac{1-\sin\theta}{\cos\theta}$

(28) $\cot t + \frac{\sin t}{1+\cos t} = \csc t$

$\frac{\cos t}{\sin t} + \frac{\sin t}{1+\cos t}$

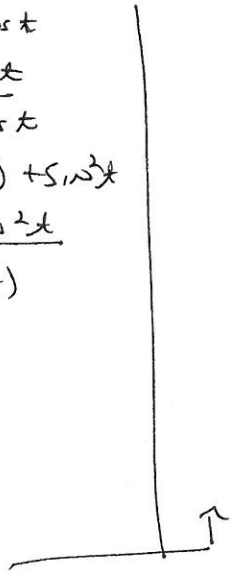
$\cos t(1+\cos t) + \sin^2 t$

$\frac{\cos t + \cos^2 t + \sin^2 t}{\sin t(1+\cos t)}$

$\frac{\cos t + 1}{\sin t(1+\cos t)}$

$\frac{1}{\sin t}$

$\csc t$



(32) $\frac{\sin x}{\cos x+1} + \frac{\cos x - 1}{\sin x} = 0$

$\frac{\sin^2 x + \cos^2 x - 1}{(\cos x+1)\sin x}$

$\frac{1-1}{(\cos x+1)\sin x}$

$\frac{0}{(\cos x+1)(\sin x)}$

0

(36) $\dfrac{\csc x - \sec x}{\csc x + \sec x} = \dfrac{\cot x - 1}{\cot x + 1}$

$\dfrac{\frac{1}{\sin x} - \frac{1}{\cos x}}{\frac{1}{\sin x} + \frac{1}{\cos x}}$ | $\dfrac{\frac{\cos x}{\sin x} - \frac{\sin x}{\sin x}}{\frac{\cos x}{\sin x} + \frac{\sin x}{\sin x}}$

$\dfrac{\frac{\cos x - \sin x}{\sin x \cos x}}{\frac{\cos x + \sin x}{\sin x \cos x}}$ | $\dfrac{\frac{\cos x - \sin x}{\sin x}}{\frac{\cos x + \sin x}{\sin x}}$

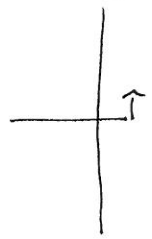
$\dfrac{\cos x - \sin x}{\cos x + \sin x}$ → $\dfrac{\cos x - \sin x}{\cos x + \sin x}$

(40) $\cot^2 2x + \cos^2 2x + \sin^2 2x$

$= \csc^2 2x$

$\cot^2 2x + 1$

$\csc^2 2x$



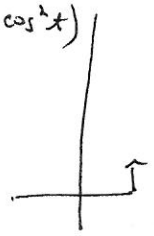
(52) $\sin^4 t - \cos^4 t = 1 - 2\cos^2 t$

$(\sin^2 t - \cos^2 t)(\sin^2 t + \cos^2 t)$

$\sin^2 t - \cos^2 t \cdot 1$

$1 - \cos^2 t - \cos^2 t$

$1 - 2\cos^2 t$



(44) $\dfrac{\cot x + \cot y}{1 - \cot x \cot y} = \dfrac{\cos x \sin y + \sin x \cos y}{\sin x \sin y - \cos x \cos y}$

$\dfrac{\frac{\cos x}{\sin x} + \frac{\cos y}{\sin y}}{1 - \frac{\cos x}{\sin x} \cdot \frac{\cos y}{\sin y}}$

$\dfrac{\cos x \sin y + \cos y \sin x}{\sin x \sin y}$

$\dfrac{\cos x \sin y + \cos y \sin x}{\sin x \sin y - \cos x \cos y}$

(48) $\dfrac{\csc t - 1}{\cot t} = \dfrac{\cot t}{\csc t + 1}$

$\dfrac{\cot t (\csc t - 1)}{(\csc t + 1)(\csc t - 1)}$

$\dfrac{\cot t (\csc t - 1)}{\csc^2 t - 1}$

$\dfrac{\cot t (\csc t - 1)}{\cot^2 t}$

$\dfrac{\csc t - 1}{\cot t}$

(56) $(\cot^2\theta + 1)(\sin^2\theta + 1) = \cot^2\theta + 2$

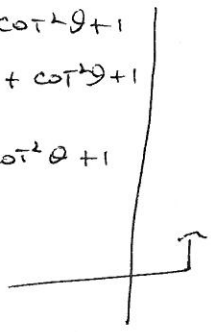
$\cot^2\theta \sin^2\theta + \sin^2\theta + \cot^2\theta + 1$

$\dfrac{\cos^2\theta}{\sin^2\theta} \cdot \sin^2\theta + \sin^2\theta + \cot^2\theta + 1$

$\cos^2\theta + \sin^2\theta + \cot^2\theta + 1$

$1 + \cot^2\theta + 1$

$\cot^2\theta + 2$



(60) $\dfrac{\sin x + \cos x}{\sin x} - \dfrac{\cos x - \sin x}{\cos x} = \sec x \csc x$

$\dfrac{\cos x(\sin x + \cos x) - \sin x(\cos x - \sin x)}{\sin x \cos x}$

$\dfrac{\cos x \sin x + \cos^2 x - \cos x \sin x + \sin^2 x}{\sin x \cos x}$

$\dfrac{1}{\sin x \cos x}$

$\dfrac{1}{\sin x} \cdot \dfrac{1}{\cos x}$

$\csc x \sec x$