Do comp chks - read them
p. 272, 273

Formulas to know

- Fund. Trig identities p. 264 $\begin{cases} \sin^2\theta + \cos^2\theta = 1 \\ 1 + \cot^2\theta = \csc^2\theta \\ \tan^2\theta + 1 = \sec^2\theta \end{cases}$

  - Sum formulas p. 270
  - Difference formulas p. 272
  - Double angle formulas p. 274

Ch. 8.8 - An extension of the identities

Sum formulas / Difference formulas

$$\sin(\alpha \pm \beta) = \sin\alpha\cos\beta \pm \sin\beta\cos\alpha$$

$$\cos(\alpha \pm \beta) = \cos\alpha\cos\beta \mp \sin\alpha\sin\beta$$

$$\tan(\alpha \pm \beta) = \frac{\tan\alpha \pm \tan\beta}{1 \mp \tan\alpha\tan\beta}$$

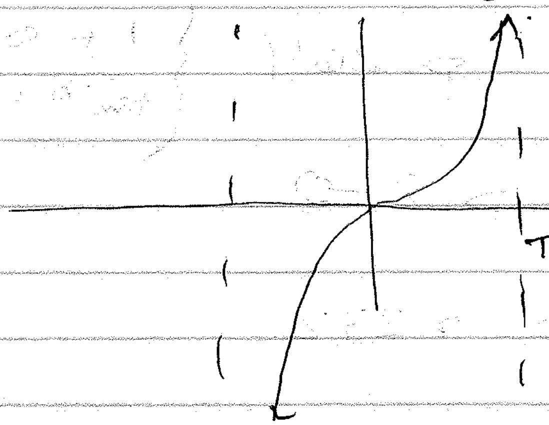
- Double angle formulas (come from sum formulas where $\alpha = \beta$)

$$\sin(\alpha+\alpha) = \sin(2\alpha) = 2\sin\alpha\cos\alpha$$

$$\cos(\alpha+\alpha) = \cos(2\alpha) = \cos^2\alpha - \sin^2\alpha$$

$$\tan(\alpha+\alpha) = \tan 2\alpha = \frac{2\tan\alpha}{1-\tan^2\alpha}$$

$$\tan x = \frac{\sin x}{\cos x}, \quad \cos x \neq 0$$



$\pi/2 \leftarrow \cos x = 0$

So ~~[illegible]~~ $\tan x$ obeys this restriction + is undefined at $\pi/2$

$$\frac{\sin x + \tan x}{\sec x + 1} \stackrel{?}{=} \sin x$$

$$\frac{\sin x + \tan x}{\sec x + 1} \cdot \frac{\sec x - 1}{\sec x - 1}$$

$\sec x \neq 1$

By introducing a new restriction on the domain during proof, ~~you need~~ you make the problem a 2-part pf. After you finish the $=$, go back + plug in the new restriction + see ~~[illegible]~~ that the equality holds.