

Each problem is worth 5 points. For full credit provide complete justification for your answers.

1. State the sum identity for sine, i.e. the one that says

$$\sin(x+y) = \underline{\sin x \cdot \cos y} + \underline{\cos x \sin y} \quad \text{Good!}$$

2. Verify the trig identity  $\tan^2 x - \sin^2 x = \tan^2 x \sin^2 x$ .

$$\tan^2 x - \sin^2 x = \frac{\sin^2 x}{\cos^2 x} - \frac{\sin^2 x \cdot \cos^2 x}{\cos^2 x}$$

$$\frac{\sin^2 x - \sin^2 x \cdot \cos^2 x}{\cos^2 x}$$

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

$$\rightarrow \frac{\sin^2 x (\sin^2 x)}{\cos^2 x}$$



Excellent

$$\boxed{\underline{\tan^2 x \sin^2 x}}$$

$$\sin^2 x + \cos^2 x = 1$$

$$\sec^2 x = 1 + \tan^2 x$$

$$\frac{\cos^2 x}{\cos^2 x} \frac{\sin^2 x}{\cos^2 x}$$