

EXTRA PRACTICE PROBLEMS FOR EXAM 2

Variation 1 of **Problem 6**. Verify the identity

$$\sec t - \cos t = \sin^2 t \sec t.$$

Variation 2 of **Problem 6**. Verify the identity

$$\frac{1}{1 + \csc x} + \frac{1}{1 - \csc x} = -2 \tan^2 x.$$

Variation of 1 **Problem 8**. Suppose $\sin \alpha = -\frac{24}{25}$ and $\cos \alpha = -\frac{7}{25}$, and consider the angle $\beta = \pi + \alpha$.

- (a) Find $\sin \beta$ and $\cos \beta$.
- (b) Indicate the Quadrant the angle β belongs to.

Variation of 2 **Problem 8**. Same as above, except that $\beta = 2\pi - \alpha$.

- (a) Find $\sin \beta$ and $\cos \beta$.
- (b) Indicate the Quadrant the angle β belongs to.

Prob 6 V1

$$\sec t - \cos t = \sin^2 t \sec t$$

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

$$\Rightarrow \frac{1 - \cos^2 t}{\cos t}$$

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

Prob 6 V2

$$\frac{1}{1 + \csc x} + \frac{1}{1 - \csc x} = -2 \tan^2 x$$

$$\Rightarrow \frac{(1 - \csc x) + (1 + \csc x)}{1 - \csc^2 x}$$

$$\Rightarrow \frac{2}{1 - \csc^2 x}$$

$$\Rightarrow \frac{2}{-\cot^2 x} \Rightarrow -2 \tan^2 x$$

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

$$1 + \cot^2 x = \csc^2 x$$

Prob 8 V1

$$\sin \alpha = \frac{-24}{25}$$

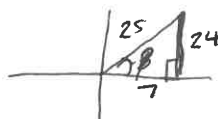
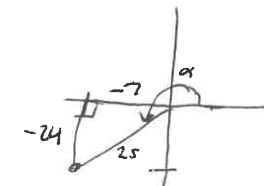
$$\cos \alpha = \frac{-7}{25}$$

$$\beta = \pi + \alpha$$

$$a) \text{ Find } \sin \beta = \frac{24}{25}$$

$$\cos \beta = \frac{7}{25}$$

b) Quadrant: I.



Or Use "Add π formulas"

$$\sin(\pi + \alpha) = -\sin \alpha$$

$$\cos(\pi + \alpha) = -\cos \alpha$$

Prob 8 V2

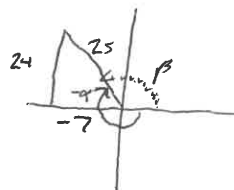
same data on α .

$$\beta = 2\pi - \alpha \approx -\alpha$$

$$a) \sin \beta = \frac{24}{25}$$

$$\cos \beta = \frac{-7}{25}$$

b) Quadrant II



Or use "Formulas for Negative"

$$\sin(-\alpha) = -\sin \alpha$$

$$\cos(-\alpha) = \cos(\alpha)$$