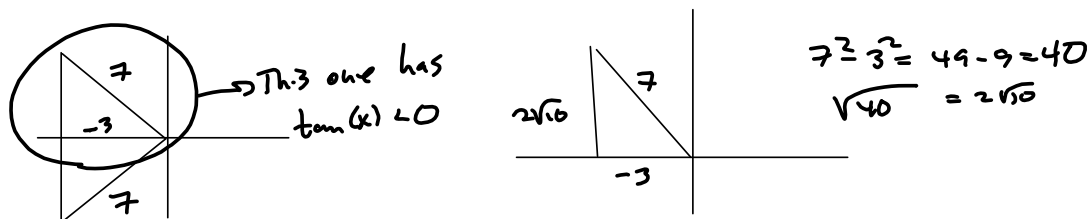


1420

WEEK 05 SOLNS

H. MILLS

- (1) Spts we find the other 5 trig functions, given
 $\sec(x) = -\frac{7}{3}$ and $\tan(x) < 0$



$$\sin(x) = \frac{2\sqrt{10}}{7}$$

$$\csc(x) = \frac{7}{2\sqrt{10}}$$

$$\cos(x) = -\frac{3}{7}$$

$$\sec(x) = -\frac{7}{3}$$

$$\tan(x) = -\frac{2\sqrt{10}}{3}$$

$$\cot(x) = -\frac{3}{2\sqrt{10}}$$

- (2) Spts we factor & simplify

$$\begin{aligned} \tan^2(x) - \tan^2(x) \sin^2(x) &= \tan^2(x) (1 - \sin^2(x)) \\ &= \tan^2(x) \cos^2(x) = \frac{\sin^2(x)}{\cos^2(x)} \cdot \cos^2(x) \boxed{= \sin^2(x)} \end{aligned}$$

- (3) Spts we factor & simplify $15 \sin^2(x) - 22 \sin(x) + 8$

$$15 \cdot 8 = 3 \cdot 5 \cdot 2 \cdot 2 \cdot 2 = (3 \cdot 2 \cdot 2)(5 \cdot 2)$$

$12 + 10 = 22$

$$15 \sin^2(x) - 12 \sin(x) - 10 \sin(x) + 8$$

$$= 3 \sin(x) (5 \sin(x) - 4) - 2 (5 \sin(x) - 4)$$

$$= \boxed{(5 \sin(x) - 4)(3 \sin(x) - 2)}$$

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MILLS

(4) 5pts use factor & simplify $\cot^2\theta + \csc\theta - 11$

$$= \csc^2\theta - 1 + \csc\theta - 11$$

$$= \csc^2\theta + \csc\theta - 12$$

$$= (\csc\theta + 4)(\csc\theta - 3)$$

(5) 5pts $5 \sin\left(\frac{\pi}{2} - \theta\right) \csc\theta = 5(\cos\theta)(\csc\theta) = 5(\cos\theta)\left(\frac{1}{\sin\theta}\right)$
 $= 5 \cot\theta$

(6) 5pts use simplify $\tan(x) - \frac{\sec^2(x)}{\tan(x)}$
 $= \tan(x) - \frac{\tan^2(x) + 1}{\tan(x)} = \tan(x) - \tan(x) - \frac{1}{\tan(x)}$
 $= -\cot(x)$