

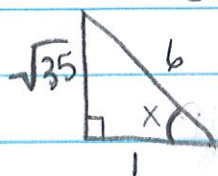
HW #40 p. 317

1. $\tan \theta = \frac{7}{5}$

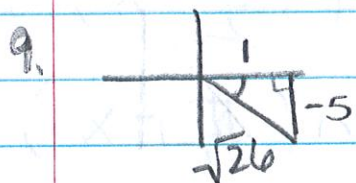
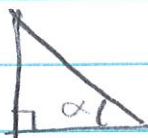
3. $\cot \alpha = 5$

5. $\cot x = \frac{1}{\sqrt{35}}$

7. $\sec \alpha = \frac{7\sqrt{10}}{20}$

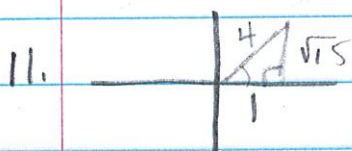


or $\frac{\sqrt{35}}{35}$



$\sec \theta = \sqrt{26}$

$\cos \theta = \frac{1}{\sqrt{26}}$



$\tan \theta = \sqrt{15}$ $\sin \theta = \frac{\sqrt{15}}{4}$

$\sec \theta = \frac{4}{1}$ hyp
adj

13. $\tan \theta = \frac{3}{\sqrt{55}}$

$\cos \theta = \frac{\sqrt{55}}{8}$

15. $\cot \theta = \frac{-2}{\sqrt{77}}$

$\sin \theta = \frac{\sqrt{77}}{9}$

17. $\sec\left(\theta - \frac{\pi}{2}\right) = \sec\left(-\left(\frac{\pi}{2} - \theta\right)\right)$
 $= \sec\left(\frac{\pi}{2} - \theta\right)$

$= \csc \theta = \boxed{-1.24}$

$$\begin{aligned}
 19. \quad \cot\left(\theta - \frac{\pi}{2}\right) &= \cot\left(-\left(\frac{\pi}{2} - \theta\right)\right) \\
 &= -\cot\left(\frac{\pi}{2} - \theta\right) \\
 &= -\tan(\theta) \\
 &= \boxed{1.52}
 \end{aligned}$$

$$\begin{aligned}
 21. \quad \tan\left(x - \frac{\pi}{2}\right) &= \tan\left(-\left(\frac{\pi}{2} - x\right)\right) \\
 &= -\tan\left(\frac{\pi}{2} - x\right) \\
 &= -\cot x \\
 &= \boxed{-1.35}
 \end{aligned}$$

$$\begin{aligned}
 23. \quad \csc x - \cos x \cot x \\
 \frac{1}{\sin x} - \cos x \cdot \frac{\cos x}{\sin x} &= \frac{1 - \cos^2 x}{\sin x} \\
 &= \frac{\sin^2 x}{\sin x} = \boxed{\sin x}
 \end{aligned}$$

$$\begin{aligned}
 25. \quad \frac{\tan x + \sin x \sec x}{\csc x \tan x} &= \frac{\frac{\sin}{\cos} + \sin x \cdot \frac{1}{\cos}}{\frac{1}{\sin} \cdot \frac{\sin}{\cos}} \\
 &= \frac{\frac{2\sin x}{\cos x}}{\frac{1}{\cos}} = \frac{2\sin x}{\cos x} \cdot \frac{\cos x}{1} \\
 &= \boxed{2\sin x}
 \end{aligned}$$

$$\begin{aligned}
 27. \frac{\csc x \cos x + \cot x}{\sec x \cot x} &= \frac{\frac{1}{\sin} \cdot \cos + \frac{\cos}{\sin}}{\frac{1}{\cos} \cdot \frac{\cos}{\sin}} \\
 &= \frac{\frac{2 \cos x}{\sin x}}{\frac{1}{\sin}} = \frac{2 \cos x}{\sin x} \cdot \frac{\sin x}{1} \\
 &= \boxed{2 \cos x}
 \end{aligned}$$

$$\begin{aligned}
 29. \frac{\sec^2 x}{\cot^2 x + 1} &= \frac{\sec^2 x}{\csc^2 x} = \frac{1}{\cos^2 x} \cdot \frac{1}{\frac{1}{\sin^2 x}} \\
 &= \frac{1}{\cos^2 x} \cdot \frac{\sin^2 x}{1} = \frac{\sin^2 x}{\cos^2 x} = \boxed{\tan^2 x}
 \end{aligned}$$

$$\begin{aligned}
 31. \cot x - \cos^3 x \csc x \\
 &= \frac{\cos x}{\sin x} - \cos^3 x \cdot \frac{1}{\sin x} \\
 &= \frac{\cos x - \cos^3 x}{\sin x} = \frac{\cos x (1 - \cos^2 x)}{\sin x} \\
 &= \frac{\cos x \cdot \sin^2 x}{\sin x} \\
 &= \boxed{\sin x \cdot \cos x}
 \end{aligned}$$