

29. $\cos(x + y)$ if $\tan x = \frac{5}{3}$ and $\sin y = \frac{1}{3}$

$$\cos x \cos y - \sin x \sin y \quad \left(\frac{1}{3} \right)^2 + \cos^2 y = 1$$

$$\left(\frac{3\sqrt{34}}{34} \right) \left(\frac{2\sqrt{2}}{3} \right) - \left(\frac{5\sqrt{34}}{34} \right) \left(\frac{1}{3} \right) \quad \cos^2 y = \frac{8}{9}$$

$$= \frac{6\sqrt{68} - 5\sqrt{34}}{102}$$

$$= \frac{12\sqrt{17} - 5\sqrt{34}}{102}$$

$$\cos y = \frac{2\sqrt{2}}{3}$$

$$\left(\frac{5}{3} \right)^2 + 1 = \sec^2 x$$

$$\frac{34}{9} = \sec^2 x$$

$$\frac{\sqrt{34}}{3} = \sec x$$

$$\frac{3\sqrt{34}}{34} = \frac{3}{\sqrt{34}} = \cos x$$

$$1 + \left(\frac{3}{5} \right)^2 = \csc^2 y$$

$$\frac{34}{25} = \csc^2 y$$

$$\frac{\sqrt{34}}{5} = \csc y$$

$$\sin y = \frac{5}{\sqrt{34}} = \frac{5\sqrt{34}}{34}$$

28. $\tan(x - y)$ if $\sin x = \frac{8}{17}$ and $\cos y = \frac{3}{5}$

$$= \frac{\tan x - \tan y}{1 + \tan x \tan y}$$

$$= \frac{\frac{8}{15} - \frac{4}{3} \cdot \frac{20}{15}}{1 + \frac{8}{15} \cdot \frac{4}{3} \cdot \frac{32}{45}}$$

$$= \frac{\frac{8}{15} - \frac{80}{45}}{1 + \frac{128}{45}}$$

$$= \frac{-\frac{12}{15}}{\frac{77}{45}} = -\frac{12}{15} \cdot \frac{45}{77} = -\frac{36}{77}$$

$$1 + \cot^2 x = \left(\frac{17}{8} \right)^2 - 1$$

$$\cot^2 x = \frac{225}{64}$$

$$\cot x = \frac{15}{8}$$

$$\tan x = \frac{8}{15}$$

$$\tan^2 y + 1 = \left(\frac{5}{3} \right)^2 - 1$$

$$\tan^2 y = \frac{16}{9}$$

$$\tan y = \frac{4}{3}$$

$$38. \tan(x + 45^\circ) = \frac{1 + \tan x}{1 - \tan x}$$

$$\begin{aligned} \tan 45^\circ = 1 & \quad \frac{\tan x + \tan 45}{1 - \tan x \tan 45} = \\ & \quad \frac{\tan x + 1}{1 - \tan x(1)} = \\ & \quad \frac{1 + \tan x}{1 - \tan x} = \frac{1 + \tan x}{1 - \tan x} \end{aligned}$$

$$34. \cos\left(\frac{\pi}{2} + x\right) = -\sin x$$

$$\cos \frac{\pi}{2} \cos x - \sin \frac{\pi}{2} \sin x =$$

$$0 \cos x - (1) \sin x =$$

$$-\sin x = -\sin x$$

Section 7.3 Daily Quiz #2 Quiz Monday (see below)

Use sum/difference identities to find the exact values.

1. $\tan(x + y)$ if $\tan x = \frac{8}{15}$ and $\tan y = \frac{4}{3}$

2. $\cos(x + y)$ if $\csc y = \frac{13}{5}$ and $\sec x = \frac{25}{7}$

Quiz Monday
over Sections 7.1-7.3