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

$$
\tan \theta=\frac{\sin \theta}{\cos \theta}
$$

29. $\cos (x+y)$ if $\tan x=\frac{5}{3}$ and $\sin y=\frac{1}{3}$
$=\cos x \cos y-\sin x \sin y \quad\left(\frac{1}{3}\right)^{2}+\cos ^{2} y=1$

$$
\begin{aligned}
& =\left(\frac{3 \sqrt{34}}{34}\right)\left(\frac{2 \sqrt{2}}{3}\right)-\left(\frac{5 \sqrt{34}}{34}\left(\frac{1}{3}\right)\right. \\
& =\frac{\sqrt{4 \sqrt{17}}-5 \sqrt{34}}{102} \\
& =\frac{12 \sqrt{17}-5 \sqrt{34}}{102}
\end{aligned}
$$

$$
\cos ^{2} y=\frac{8}{9}
$$

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

$$
\begin{aligned}
& \cos x=\frac{3}{\sqrt{34}}=\frac{3 \sqrt{34}}{34} \\
& \frac{5 \sqrt{34}}{34}=\sin x
\end{aligned}
$$

$$
\begin{aligned}
& \begin{array}{l|r|r}
\tan x-\tan y \\
1+\tan x \tan y & \cot ^{2} x=\frac{225}{64} & \cot ^{2} x=\left(\frac{17}{8}\right)^{2}-1
\end{array} \begin{array}{r}
\tan 2 y+1=\left(\frac{5}{3}\right)^{2}-1 \\
-1 \\
-1 \\
\tan ^{2} y=\frac{16}{9}
\end{array} \\
& =\frac{8}{15}-\frac{4}{8} \frac{20}{15} \\
& \cot x=\frac{15}{8} \\
& \frac{45}{45} x+\left(\frac{8}{75}\right)\left(\frac{4}{3}\right) \frac{32}{45} \\
& \tan x=\frac{8}{15} \\
& \tan y=\frac{4}{3} \\
& =\frac{-\frac{12}{15}}{\frac{77}{45}}=-\frac{12}{\frac{15}{1}} \cdot \frac{45}{77}=-\frac{36}{77} \\
& -
\end{aligned}
$$

$$
\text { 16. } \begin{aligned}
\left.\cos \frac{7 \pi}{12}\right) & =\cos 105^{\circ} \\
\cos (60+45) & =\cos 60 \cos 45-\sin 60 \sin 45 \\
& =\left(\frac{1}{2}\right)\left(\frac{\sqrt{2}}{2}\right)-\left(\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}\right) \\
& =\frac{\sqrt{2}-\sqrt{6}}{4}
\end{aligned}
$$

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

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

February 282013 7th.gwb - 3/3 - Thu Feb 282013 13:49:22

$$
\begin{aligned}
& \text { 20. } \tan 165^{\circ}=\tan (135+30) \\
& \tan 135=-1 \\
& \tan 30=\frac{\sqrt{3}}{3} \\
& =\frac{\tan 135+\tan 30}{1-\tan 135 \tan 30}=\frac{-1+\frac{\sqrt{3}}{3}}{1-(-1)\left(\frac{\sqrt{3}}{3}\right)}=\frac{-\frac{3}{3}+\frac{\sqrt{3}}{3}}{\frac{5}{3}+\frac{\sqrt{3}}{3}} \\
& =\frac{\frac{-3+\sqrt{3}}{3}}{\frac{3+\sqrt{3}}{3}}=\frac{-3+\sqrt{3}}{36} \cdot \frac{36}{3+\sqrt{3}}=\frac{-3+\sqrt{3}}{3+\sqrt{3}} \cdot \frac{3-\sqrt{3}}{3-\sqrt{3}} \\
& =\frac{-9+3 \sqrt{3}+3 \sqrt{3}-3}{9-3}=\frac{-12+6 \sqrt{3}}{6}=-2+\sqrt{3} \\
& \text { (34) } \cos \left(\frac{\pi}{2}+x\right)=-\sin x \\
& \cos \frac{\pi}{2} \cos x-\sin \frac{\pi}{2} \sin x= \\
& \text { (0) } \cos x-(1) \sin x= \\
& -\sin x=-\sin x
\end{aligned}
$$

