Name: Key

5.4 & 5.5(part 1) Practice Problems

1) Find the exact value: cos195°

$\cos(135° + 60°)$

$\cos 135°\cos 60° - \sin 135°\sin 60°$

$\left(\frac{-\sqrt{2}}{2}\right)\left(\frac{1}{2}\right) - \left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{3}}{2}\right)$

$\frac{-\sqrt{2}-\sqrt{6}}{4}$

2) Find the exact value: $\sin\frac{13\pi}{12}$ or 195°

$\sin\left(\frac{10\pi}{12} + \frac{3\pi}{12}\right)$

$\sin\left(\frac{5\pi}{6} + \frac{\pi}{4}\right)$

$\sin\frac{5\pi}{6}\cos\frac{\pi}{4} + \cos\frac{5\pi}{6}\sin\frac{\pi}{4}$

$\frac{1}{2}\left(\frac{+\sqrt{2}}{2}\right) + \left(\frac{-\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}\right)$

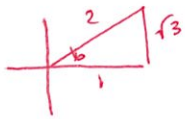
$\frac{+\sqrt{2}}{4} - \frac{\sqrt{6}}{4}$

$\frac{\sqrt{2}-\sqrt{6}}{4}$

3) Find cos $(a - b)$, given that $\sin a = \frac{8}{17}$ with $\frac{\pi}{2} < a < \pi$ and $\cos b = \frac{1}{2}$ with $0 < b < \frac{\pi}{2}$

Q2

Q1



$\cos a\cos b + \sin a\sin b$

$\left(\frac{-15}{17}\right)\left(\frac{1}{2}\right) + \left(\frac{8}{17}\right)\left(\frac{\sqrt{3}}{2}\right)$

$\frac{-15}{34} + \frac{8\sqrt{3}}{34}$

$\frac{-15+8\sqrt{3}}{34}$

4) Find the exact value: tan (-15°) or tan 345°

$\tan(30° - 45°)$

$\frac{\tan 30° - \tan 45°}{1 + \tan 30°\tan 45°}$

$\frac{\frac{\sqrt{3}}{3} - 1}{1 + \left(\frac{\sqrt{3}}{3}\right)(1)}$

$\frac{\frac{\sqrt{3}-3}{3}(3-\sqrt{3})}{\frac{3+\sqrt{3}}{3}(3-\sqrt{3})}$

$\frac{-9+3\sqrt{3}+3\sqrt{3}-\sqrt{9}}{9-\sqrt{9}}$

$\frac{-6+6\sqrt{3}}{6}$

$-1+\sqrt{3}$

5) Find the exact value: sin(75°) $\sin(30° + 45°)$

$\sin 30°\cos 45° + \cos 30°\sin 45°$

$\left(\frac{1}{2}\right)\left(\frac{\sqrt{2}}{2}\right) + \left(\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}\right)$

$\frac{\sqrt{2}+\sqrt{6}}{4}$

6) Given $\cos a = \frac{1}{2}$ with $0 < a < \frac{\pi}{2}$, find sin2a and $\tan\frac{a}{2}$.

Q1

$2\sin a\cos a$

$2\left(\frac{\sqrt{3}}{2}\right)\left(\frac{1}{2}\right)$

$\frac{\sqrt{3}}{2}$

$\frac{1-\frac{1}{2}}{\frac{\sqrt{3}}{2}}$

$\frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}}$

$\frac{1}{\sqrt{3}}$

$\frac{\sqrt{3}}{3}$

7) Find the exact value: $\cos\frac{2\pi}{3}\cos\frac{\pi}{4} + \sin\frac{2\pi}{3}\sin\frac{\pi}{4}$

$\cos\left(\frac{2\pi}{3} - \frac{\pi}{4}\right)$

$\cos\left(\frac{8\pi}{12} - \frac{3\pi}{12}\right)$

$\cos\frac{5\pi}{12}$

$\frac{\sqrt{2}}{2}$

8) Simplify: $\tan(x - 2\pi)$

$\frac{\tan x - \tan 2\pi}{1 + \tan x\tan 2\pi}$

$\frac{\tan x - 0}{1 + \tan x(0)}$

$\tan x$