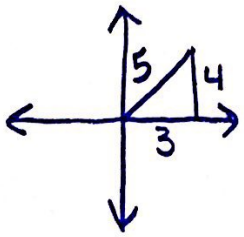
Sum/Difference Formulas Day 2

Find the exact values of the trig functions given that

$\tan a = \frac{4}{3}$, $\frac{y}{x}$ where $0 < a < \frac{\pi}{2}$

QI

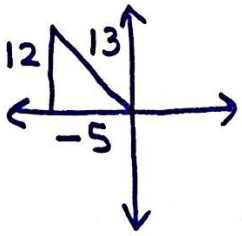


$\sin a = \frac{y}{r} = \frac{4}{5}$

$\cos a = \frac{x}{r} = \frac{3}{5}$

$\cot \theta = -\frac{5}{12}$ $\frac{x}{y}$ where $\frac{\pi}{2} < \theta < \pi$

QII



$\sin \theta = \frac{y}{r} = \frac{12}{13}$

$\cos \theta = \frac{x}{r} = \frac{-5}{13}$

1. $\sin(a+\theta)$

$\sin a \cos\theta + \cos a \sin\theta$

$\left(\frac{4}{5}\right)\left(\frac{-5}{13}\right) + \left(\frac{3}{5}\right)\left(\frac{12}{13}\right)$

$\frac{-20}{65} + \frac{36}{65}$

$\boxed{\frac{16}{65}}$

2. $\cos(\theta - a)$

$\cos\theta \cos a + \sin\theta \sin a$

$\left(\frac{-5}{13}\right)\left(\frac{3}{5}\right) + \left(\frac{12}{13}\right)\left(\frac{4}{5}\right)$

$\frac{-15}{65} + \frac{48}{65}$

$\boxed{\frac{33}{65}}$

HW: 19-28, 35-42