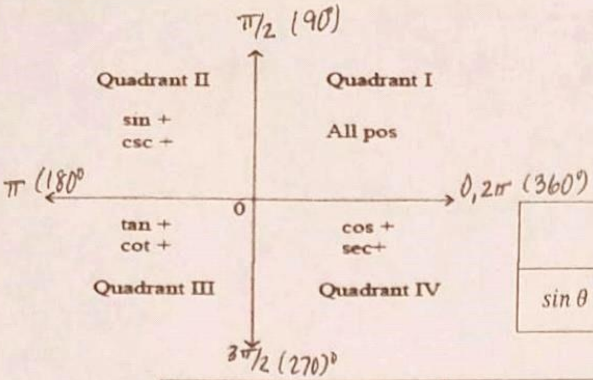

$x^2 + y^2 = r^2$					
$\sin\theta = \frac{y}{r}$	$\cos\theta = \frac{x}{r}$	$\tan\theta = \frac{y}{x}$	$\csc\theta = \frac{r}{y}$	$\sec\theta = \frac{r}{x}$	$\cot\theta = \frac{x}{y}$

Main Ideas/Questions	Notes	
	Sum of Angles	Difference of Angles
Sum and Difference of Angles Identities	$\sin(A+B) = \sin A \cdot \cos B + \cos A \cdot \sin B$	$\sin(A-B) = \sin A \cdot \cos B - \cos A \cdot \sin B$
	$\cos(A+B) = \cos A \cdot \cos B - \sin A \cdot \sin B$	$\cos(A-B) = \cos A \cdot \cos B + \sin A \cdot \sin B$
	$\tan(A+B) = \dfrac{\tan A + \tan B}{1 - \tan A \cdot \tan B}$	$\tan(A-B) = \dfrac{\tan A - \tan B}{1 + \tan A \cdot \tan B}$

Examples:

Q1 Q1

Given $\sin A = \frac{5}{13}; 0 < A < \frac{\pi}{2}$, and $\cos B = \frac{4}{5}; 0 < B < \frac{\pi}{2}$, find

A: $x=12$ $y=5$ $r=13$

B: $x=4$ $y=3$ $r=5$

a) sin (A + B) = $\sin A \cos B + \cos A \sin B$

$\left(\frac{5}{13}\right)\left(\frac{4}{5}\right) + \left(\frac{12}{13}\right)\left(\frac{3}{5}\right) = \boxed{\frac{56}{65}}$

b) cos (A + B) = $\cos A \cos B - \sin A \sin B$

$\left(\frac{12}{13}\right)\left(\frac{4}{5}\right) - \left(\frac{5}{13}\right)\left(\frac{3}{5}\right) = \boxed{\frac{33}{65}}$

Q1 : Everything positive

Q1 Q2

Given $\sin A = \frac{12}{13}; 0 < A < \frac{\pi}{2}$, and $\sin B = \frac{4}{5}; \frac{\pi}{2} < B < \pi$, find

A: $x=5$ $y=12$ $r=13$

B: $x=3$ $y=4$ $r=5$

a) sin (A - B) = $\sin A \cos B - \cos A \sin B$

$\left(\frac{12}{13}\right)\left(-\frac{3}{5}\right) - \left(\frac{5}{13}\right)\left(\frac{4}{5}\right) = \boxed{\frac{-56}{65}}$

b) cos (A - B) = $\cos A \cos B + \sin A \sin B$

$\left(\frac{5}{13}\right)\left(-\frac{3}{5}\right) + \left(\frac{12}{13}\right)\left(\frac{4}{5}\right) = \boxed{\frac{33}{65}}$

A:Q1: sin+, cos +

B:Q2: sin +, cos −

Q3 Q4

Given $\tan A = \frac{9}{40}; \pi < A < \frac{3\pi}{2}$, and $\cos B = \frac{1}{2}; \frac{3\pi}{2} < B < 2\pi$, find

A: $x=40$ $y=9$ $r=41$

B: $x=1$ $y=\sqrt{3}$ $r=2$

a) sin (A + B) = $\sin A \cos B + \cos A \sin B$

$\left(\frac{9}{41}\right)\left(\frac{1}{2}\right) + \left(\frac{40}{41}\right)\left(\frac{\sqrt{3}}{2}\right)$ $\boxed{\frac{9-40\sqrt{3}}{82}}$

b) cos (A - B) = $\cos A \cos B + \sin A \sin B$

$\left(\frac{40}{41}\right)\left(+\frac{1}{2}\right) + \left(\frac{9}{41}\right)\left(-\frac{\sqrt{3}}{2}\right)$

$\boxed{\frac{40-9\sqrt{3}}{82}}$

A:Q3: cos −, sin −

B:Q4: cos +, sin −