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Find the exact value of the following identities using the given information.

1) $\sin A = \frac{3}{5}$ and lies in quadrant I, and $\sin B = \frac{5}{13}$ and lies in quadrant II.

a) $\cos(A+B) = \cos A \cos B - \sin A \sin B$ A: $x=4$ $y=3$ $r=5$
 $\left(\frac{4}{5}\right)\left(-\frac{12}{13}\right) - \left(\frac{3}{5}\right)\left(\frac{5}{13}\right) = \frac{-63}{65}$ B: $x=12$ $y=5$ $r=13$

b) $\sin(A+B) = \sin A \cos B + \cos A \sin B$ A: Q1: All pos
 $\left(\frac{3}{5}\right)\left(-\frac{12}{13}\right) + \left(\frac{4}{5}\right)\left(\frac{5}{13}\right) = \frac{-16}{65}$ B: Q2: $\sin+$, $\cos-$

2) $\cos A = \frac{8}{17}$ and lies in quadrant IV, and $\sin B = -\frac{1}{2}$ and lies in quadrant III.

a) $\cos(A-B) = \cos A \cos B - \sin A \sin B$ A: $x=8$ $y=15$ $r=17$
 $\left(\frac{8}{17}\right)\left(-\frac{\sqrt{3}}{2}\right) - \left(-\frac{15}{17}\right)\left(-\frac{1}{2}\right) = \frac{-8\sqrt{3}-15}{34}$ B: $x=\sqrt{3}$ $y=-1$ $r=2$

b) $\sin(A-B) = \sin A \cos B - \cos A \sin B$ A: Q4: $\cos+$, $\sin-$
 $\left(-\frac{15}{17}\right)\left(-\frac{\sqrt{3}}{2}\right) - \left(\frac{8}{17}\right)\left(-\frac{1}{2}\right) = \frac{5\sqrt{3}+8}{34}$ B: Q3: $\sin-$, $\cos-$

3) $\sin A = \frac{4}{5}$ and lies in quadrant I, and $\sin B = \frac{7}{25}$ and lies in quadrant II.

a) $\cos(A+B) = \cos A \cos B - \sin A \sin B$ A: $x=3$ $y=4$ $r=5$
 $\left(\frac{3}{5}\right)\left(-\frac{24}{25}\right) - \left(\frac{4}{5}\right)\left(\frac{7}{25}\right) = \frac{-100}{125}$ B: $x=24$ $y=7$ $r=25$

b) $\sin(A-B) = \sin A \cos B - \cos A \sin B$ A: Q1: $\sin+$, $\cos+$
 $\left(\frac{4}{5}\right)\left(-\frac{24}{25}\right) - \left(\frac{3}{5}\right)\left(\frac{7}{25}\right) = \frac{-117}{125}$ B: Q2: $\sin+$, $\cos-$

4) $\tan A = -\frac{3}{4}$ and lies in quadrant II, and $\cos B = \frac{1}{3}$ and lies in quadrant I.

a) $\cos(A-B) = \cos A \cos B + \sin A \sin B$ A: $x=+4$ $y=3$ $r=5$
 $\left(-\frac{4}{5}\right)\left(\frac{1}{3}\right) + \left(\frac{3}{5}\right)\left(\frac{2\sqrt{2}}{3}\right) = \frac{4+6\sqrt{2}}{15}$ B: $x=1$ $y=2\sqrt{2}$ $r=3$

b) $\sin(A+B) = \sin A \cos B + \cos A \sin B$ A: Q2: $\sin+$, $\cos-$
 $\left(\frac{3}{5}\right)\left(\frac{1}{3}\right) + \left(-\frac{4}{5}\right)\left(\frac{2\sqrt{2}}{3}\right) = \frac{3-8\sqrt{2}}{15}$ B: Q1: $\sin+$, $\cos+$