More problems for section 4.5 of *Essentials of Precalculus with Calculus Previews* by Zill and Dewar, 6e.

1. Use the given information to find $\sin(x+y)$, $\sin(x-y)$, $\cos(x+y)$, and $\cos(x-y)$.

a. $\cos x = \dfrac{1}{3},\ \dfrac{3\pi}{2} < x < 2\pi.\ \ \sin y = -\dfrac{4}{5},\ \dfrac{-\pi}{2} < y < 0.$

b. $\tan x = \dfrac{2}{3},\ 0 < x < \dfrac{\pi}{2}.\ \ \cos y = -\dfrac{2}{5},\ \pi < y < \dfrac{3\pi}{2}.$

c. $\cos x = \dfrac{2}{3},\ 0 < x < \pi.\ \ \sin y = \dfrac{3}{4},\ \dfrac{-\pi}{2} < y < \dfrac{\pi}{2}.$

Answers

1a. $\sin(x \pm y) = (-3\sqrt{8} \mp 4)/15$, $\cos(x \pm y) = (3 \mp 4\sqrt{8})/15$. 1b. $\sin(x \pm y) = (-4 \mp 3\sqrt{21})/5\sqrt{13}$, $\cos(x \pm y) = (-6 \pm 2\sqrt{21}\sqrt{8})/5\sqrt{13}$.
1c. $\sin(x \pm y) = (\sqrt{35} \pm 6)/12$, $\cos(x \pm y) = (2\sqrt{7} \mp 3\sqrt{5})/12$.