8. Find the exact value of the trig functions given that.

$\sin u = \frac{5}{13}$ $\quad 0 < u < \frac{\pi}{2}$ **and** $\cos v = -\frac{3}{5}$ $\quad \frac{\pi}{2} < v < \pi$

a. $\sin(u+v)$

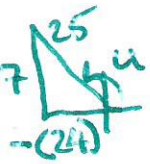
b. $\cos(u+v)$

c. $\sin(u-v)$

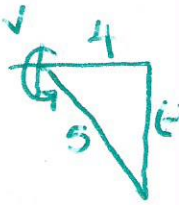
d. $\cos(u-v)$

9. Find the exact value of the trig functions given that.

$\sin u = \frac{7}{25}$ $\quad \frac{\pi}{2} < u < \pi$ (II) **and** $\cos v = \frac{4}{5}$ $\quad \frac{3\pi}{2} < v < 2\pi$ (IV)



$\cos u = \frac{-24}{25}$



$\sin v = -3/5$

a. $\sin(u+v) = \sin u\cos v + \cos u \sin v$ $\quad \frac{7}{25}\cdot\frac{4}{5} + \frac{-24}{25}\cdot\frac{-3}{5}$ $\quad 28/125 + 72/125 = \frac{100}{125} = 4/5$

b. $\cos(u+v)$

c. $\sin(u-v)$

d. $\cos(u-v)$ $\quad \cos u\cos v + \sin u \sin v$ $\quad -24/25 \cdot 4/5 + 7/25 \cdot -3/5 = -117/125$

Verify the identities.

10. $\sin(\frac{\pi}{2}+x) = \cos x$

11. $\sin(3\pi - x) = \sin x$

$3\pi = \pi$

$\sin 3\pi \cdot \cos x - \cos 3\pi \cdot \sin x$

$0 \cdot \cos x - (-1)\sin x = 0 - (-\sin x) = \sin x$

12. $\cos(\pi - \theta) + \sin(\frac{\pi}{2}+\theta) = 0$

13. $\cos(x+y)\cos(x-y) = \cos^2 x - \sin^2 y$

$(\cos x\cos y - \sin x \sin y)(\cos x \cos y + \sin x \sin y)$ FOIL

$\cos^2 x\cos^2 y + \cos x\cos y\sin x\sin y - \cos x\cos y\sin x\sin y - \sin^2 x\sin^2 y = \cos^2 x(1-\sin^2 y) - \sin^2 y(1-\cos^2 x)$

$= \cos^2 x - \cos^2 x\sin^2 x - \sin^2 y + \cos^2 x\sin^2 y$

$= \cos^2 x - \sin^2 y$

14. $\sin(x+y) + \sin(x-y) = 2\sin x\cos y$