

S 2.4

$$\cos\left(\frac{5\pi}{12}\right)$$

ALL WE NEED:

Two formulas for memory:

$$\begin{aligned}\sin(u+v) &= \sin u \cos v + \sin v \cos u \\ \cos(u+v) &= \cos u \cos v - \sin u \sin v\end{aligned}$$

Don't
memorize

$$\begin{aligned}\sin(u-v) & \text{ Remember } \sin(-x) = -\sin x \\ \cos(u-v) & \text{ Remember } \cos(-x) = \cos(x)\end{aligned}$$

$$\sin(u-v) = \sin(u+(-v))$$

$$= \sin u \cos(-v) + \sin(-v) \cos u$$

$$= \sin u \cos v - \sin v \cos u$$

$$\tan(u+v) = \frac{\sin(u+v)}{\cos(u+v)}$$

#s 13-20 Find sine, cosine, tangent for θ

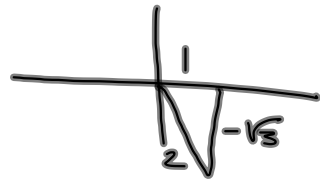
$$\theta = -\frac{\pi}{12} = \frac{-\pi}{12} = \frac{3\pi - 4\pi}{12} = \frac{3\pi}{12} - \frac{4\pi}{12} = \frac{\pi}{4} - \frac{\pi}{3}$$

$$\sin\left(-\frac{\pi}{12}\right) = \sin\left(\frac{\pi}{4} - \frac{\pi}{3}\right)$$

$$= \sin\frac{\pi}{4}\cos\left(-\frac{\pi}{3}\right) + \sin\left(-\frac{\pi}{3}\right)\cos\left(\frac{\pi}{4}\right)$$

$$= \left(\frac{1}{\sqrt{2}}\right)\left(\frac{1}{2}\right) + \left(-\frac{\sqrt{3}}{2}\right)\left(\frac{1}{\sqrt{2}}\right)$$

$$= \frac{1}{2\sqrt{2}} - \frac{\sqrt{3}}{2\sqrt{2}} = \frac{1-\sqrt{3}}{2\sqrt{2}} \text{ is fine.}$$



#s 29-36 From the other direction

$$\begin{aligned} \textcircled{29} \quad & \sin 3 \cos 1.2 - \cos 3 \sin 1.2 && \sin u \cos v + \sin v \cos u \\ &= \sin 3 \cos(-1.2) + \cos 3 \sin(-1.2) \\ &= \sin(3 + (-1.2)) \\ &= \sin(1.8) \end{aligned}$$

#s 37-42

$$\begin{aligned} & \sin \frac{\pi}{12} \cos \frac{\pi}{4} + \cos \frac{\pi}{12} \sin \frac{\pi}{4} \\ &= \sin \left(\frac{\pi}{12} + \frac{\pi}{4} \right) = \sin \left(\frac{\pi}{3} \right) = \frac{\sqrt{3}}{2} \end{aligned}$$

$$\begin{aligned} \frac{\pi}{12} + \frac{3\pi}{12} &= \frac{4\pi}{12} \\ &= \frac{\pi}{3} \end{aligned}$$

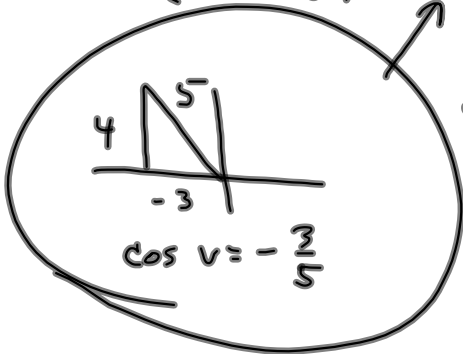


#s 43-50 Puzzles!

$$\begin{aligned} \sin u &= \frac{5}{13}, \quad \cos v = -\frac{3}{5} \\ u, v &\in \text{Q II} \end{aligned}$$

$$\sin(u+v) = ?$$

$$\begin{aligned} & \sin u \cos v + \sin v \cos u \\ & \left(\frac{5}{13} \right) \left(-\frac{3}{5} \right) + \left(\frac{4}{5} \right) \left(-\frac{12}{13} \right) \end{aligned}$$



$$\sin v = \frac{4}{5}$$

Dang! A game that uses cofunc. ident.!

