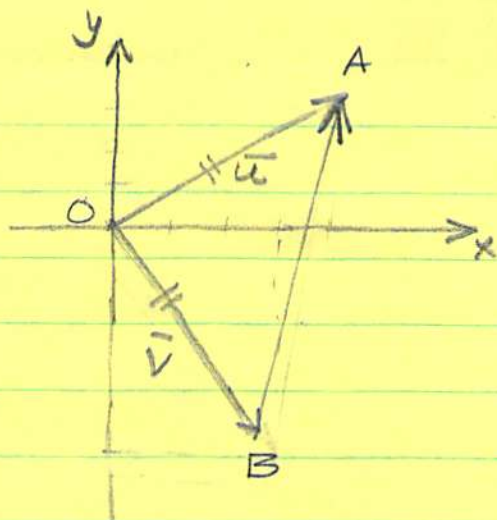


12.3  
14



Let  $\bar{u} = \langle 4, 3 \rangle$ .

By problem  $\frac{12.3}{8}$ ,

$\bar{v} = \langle 3, -4 \rangle \perp \bar{u}$ ,

and  $\|\bar{u}\| = \|\bar{v}\|$ .

Then the triangle OAB (see figure) is an isosceles triangle and therefore  $\angle OAB = \frac{\pi}{4}$ .

Therefore,  $\bar{u} - \bar{v}$  makes an angle of  $\frac{\pi}{4}$  with  $\bar{u}$ .

$$\begin{aligned}\bar{u} - \bar{v} &= \langle 4, 3 \rangle - \langle 3, -4 \rangle \\ &= \langle 1, 7 \rangle\end{aligned}$$

and  $\|\bar{u} - \bar{v}\| = \sqrt{50}$ .

Therefore, the unit vectors  $\langle \frac{1}{\sqrt{50}}, \frac{7}{\sqrt{50}} \rangle$  and

$\langle -\frac{1}{\sqrt{50}}, -\frac{7}{\sqrt{50}} \rangle$ , both make an angle of  $\frac{\pi}{4}$  with  $\bar{u}$ .