

Work

$$W = F \cdot D$$

Dot
↓

The work done by force F in moving along vector D .

$F = \langle 4, 3 \rangle$ it moves an object from $\langle 1, 5 \rangle$ to $\langle 4, 8 \rangle$

$$D = \langle 4-1, 8-5 \rangle = \langle 3, 3 \rangle$$

$$W = \langle 4, 3 \rangle \cdot \langle 3, 3 \rangle = 12 + 9 = 21 \text{ ft/pounds}$$

Nm

$$2 \cos^2 \theta + \sin \theta = 1$$

$$2(1 - \sin^2 \theta) + \sin \theta = 1$$

$$2 - 2 \sin^2 \theta + \sin \theta = 1$$

$$0 \leq \theta \leq 2\pi$$

$$\theta = \frac{\pi}{2}, \frac{7\pi}{6}, \frac{11\pi}{6}$$

$$0 = 2 \sin^2 \theta - \sin \theta - 1$$

$$0 = (2 \sin \theta + 1)(\sin \theta - 1)$$

$$2 \sin \theta + 1 = 0$$

$$\sin \theta = -\frac{1}{2}$$

$$\sin \theta - 1 = 0$$

$$\sin \theta = 1$$

$$\theta = \frac{7\pi}{6}$$

$$\frac{11\pi}{6} = \theta$$

$$\theta = \frac{\pi}{2}$$

$\sin 3\theta = \frac{\sqrt{3}}{2}$

$0 \leq \theta \leq 2\pi$

$3\theta = \frac{\pi}{3} + \frac{2k\pi}{3}$

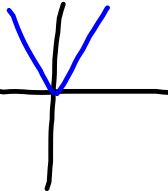
$\theta = \frac{\pi}{9} + \frac{2k\pi}{3}$

$3\theta = \frac{2\pi}{3} + \frac{2k\pi}{3}$

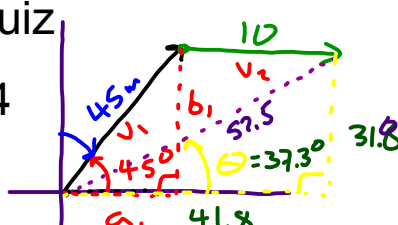
$\frac{\pi}{9}, \frac{7\pi}{9}, \frac{13\pi}{9}, \frac{18\pi}{9}$

$\frac{\pi}{9} + \frac{6\pi}{9} =$

$\frac{2\pi}{9} +$



Quiz #4



$\langle 10, 0 \rangle$
 $10i + 0j = v_2$

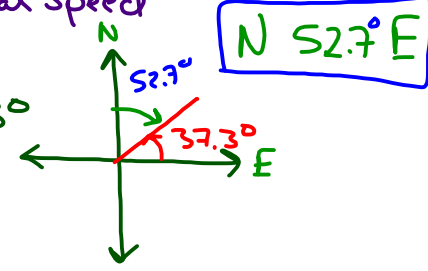
$\langle 45\frac{\sqrt{2}}{2}, 45\frac{\sqrt{2}}{2} \rangle = v_1$
 $45\frac{\sqrt{2}}{2}i + 45\frac{\sqrt{2}}{2}j$
 $41.8 \quad 31.8$

$v_1 + v_2 = \langle 45\frac{\sqrt{2}}{2} + 10, 45\frac{\sqrt{2}}{2} \rangle$

$|v_1 + v_2| = \sqrt{41.8^2 + 31.8^2} = 52.5$ or $(45\frac{\sqrt{2}}{2} + 10)i + 45\frac{\sqrt{2}}{2}j$

$\tan \theta = \frac{31.8}{41.8}$
 $\tan^{-1}\left(\frac{31.8}{41.8}\right) = \theta = 37.3^\circ$

real speed



N 52.7° E