
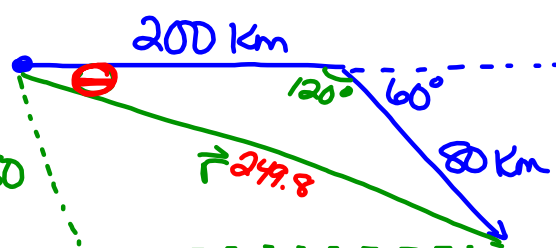


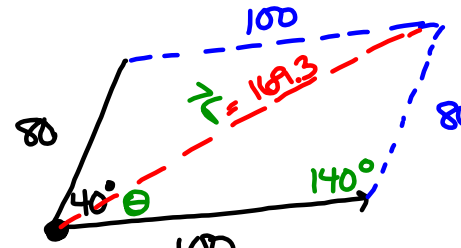
Applications w/ Vectors

①  $\tan \theta = \frac{70}{250}$
 $70^2 + 250^2 = r^2$ $2^{\text{nd}} \tan (70 \div 250)$
 $r = 259.6$ $\theta = 15.6^\circ$

② 
Law of Cosines
 $r^2 = 200^2 + 80^2 - 2(200)(80)\cos 120^\circ$
 $r = 249.8 \text{ km}$
 $\frac{249.8}{\sin 120^\circ} = \frac{80}{\sin \theta}$
 $\theta = 16.1^\circ$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

③ 

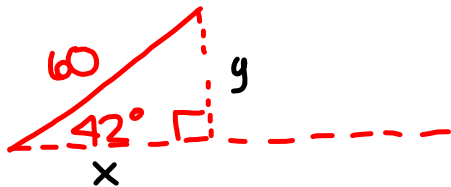
$$r^2 = 100^2 + 80^2 - 2(100)(80)\cos 140^\circ$$

$$r = 169.3$$

$$\frac{169.3}{\sin 140^\circ} = \frac{80}{\sin \theta}$$

$$\theta = 17.7^\circ$$

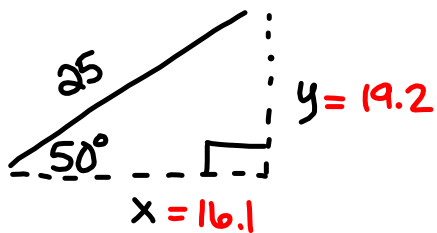
Construction



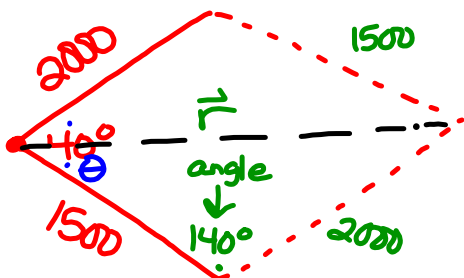
$$\sin 42^\circ = \frac{y}{60} \quad y = 40.15 \approx 40.2$$

$$\cos 42^\circ = \frac{x}{60} \quad x = 44.59 \approx 44.6$$

Yardwork

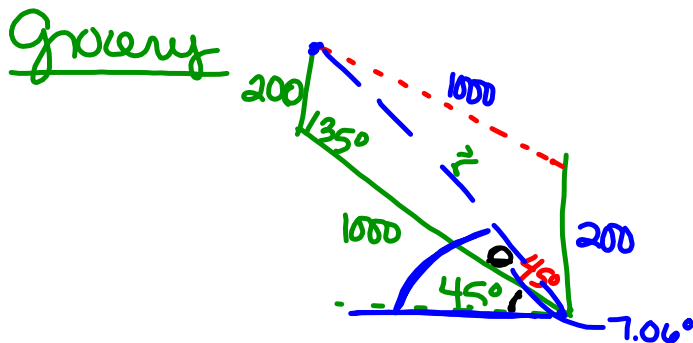
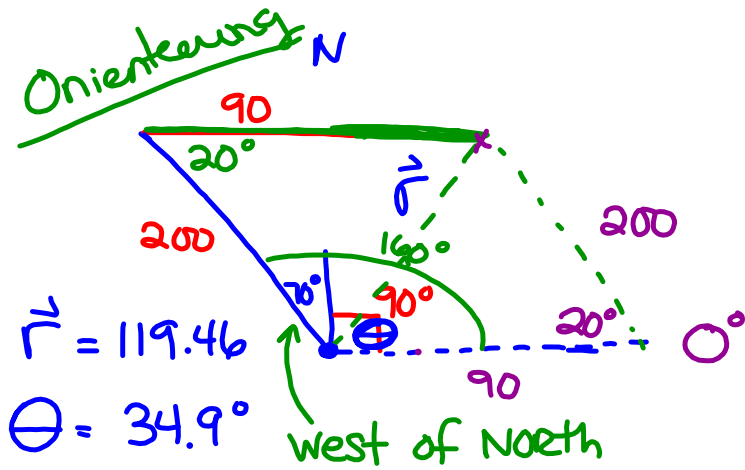


Farming



$$r^2 = 1500^2 + 2000^2 - 2(1500)(2000)\cos 140^\circ$$

$$a^2 = b^2 + c^2 - 2bc \cos A \quad r = 3293.4$$



$$\vec{r}^2 = 1000^2 + 200^2 - 2(1000 \times 200) \cos 135^\circ$$

$$\vec{r} = 1150.15$$

$$7.06^\circ + 45^\circ = \underline{\underline{52.06^\circ}}$$

$$\frac{1150.15}{\sin 135^\circ} = \frac{200}{\sin \Theta}$$

$\Theta = 7.06^\circ$