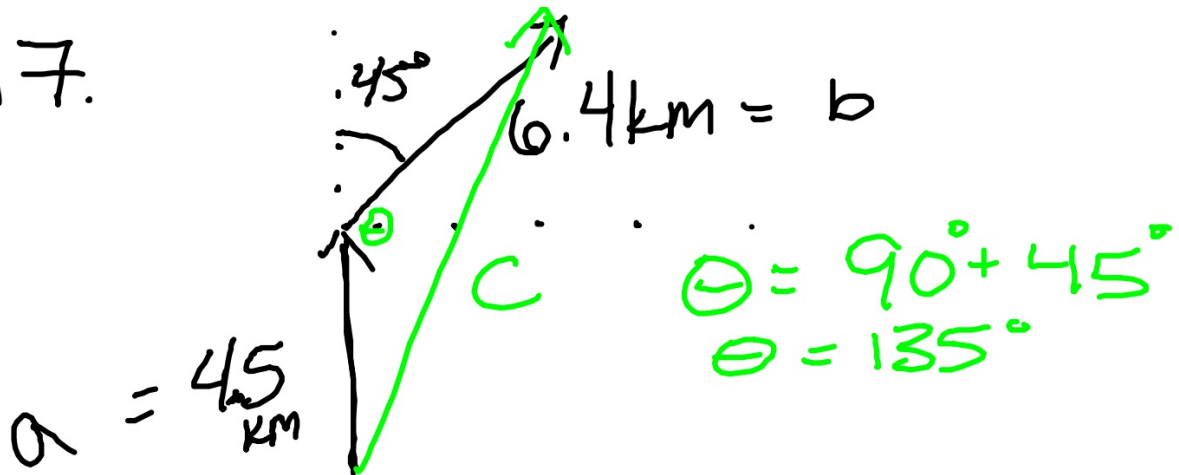


17.



$$c^2 = a^2 + b^2 - 2ab \cos c$$

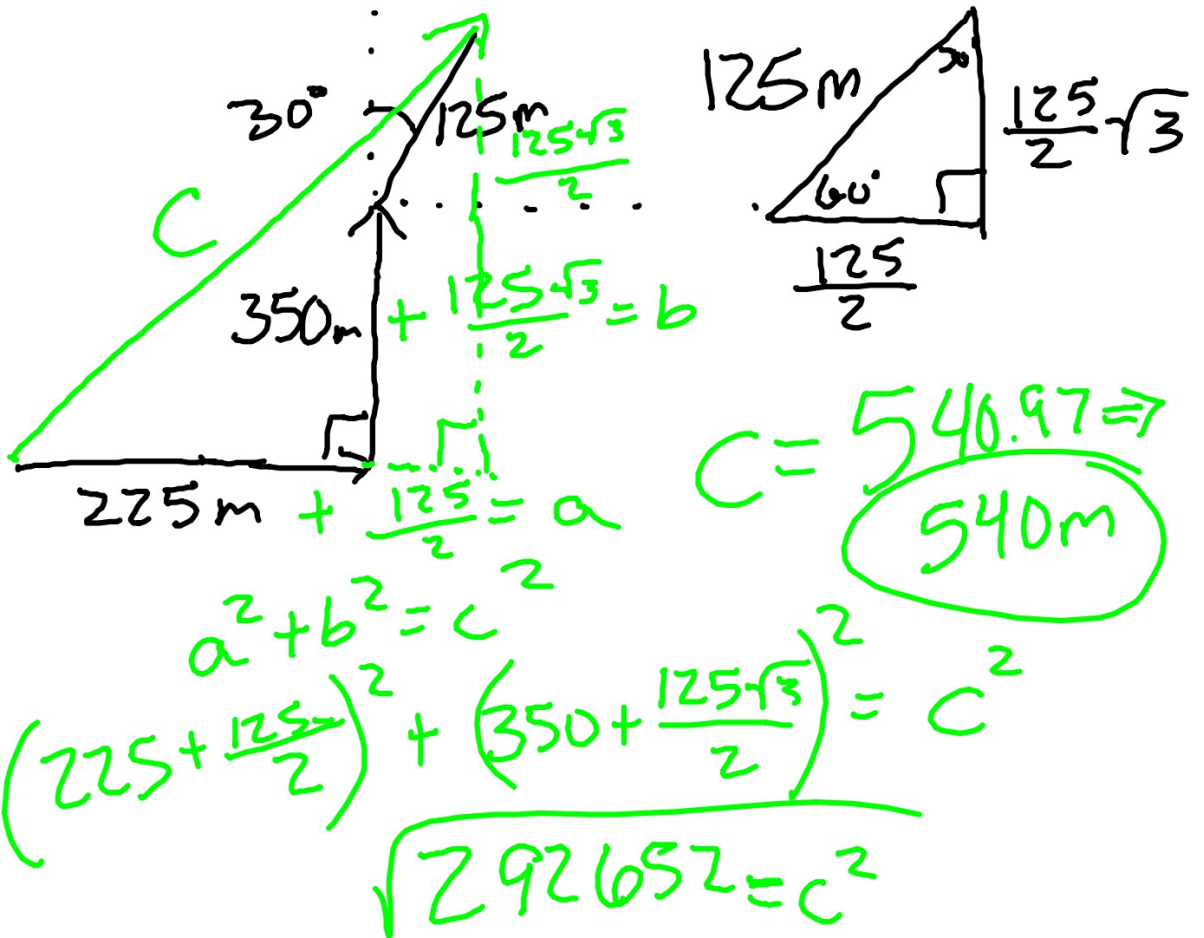
$$(4.5)^2 + (6.4)^2 - 2 \left( \frac{4.5}{\text{km}} \right) \left( \frac{6.4}{\text{km}} \right) \cdot$$

$$c^2 = 101.94$$

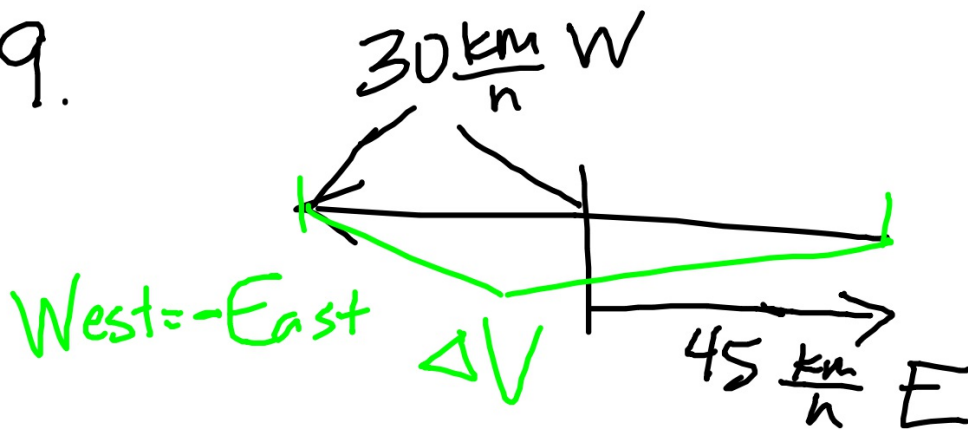
$\cos 135$

$$c = 10.096 \Rightarrow \boxed{c = 10. \text{ km}}$$

18.



19.



$$V_F - V_I = \Delta V$$

$$\frac{30 \text{ km W}}{h} - \left( -\frac{45 \text{ km W}}{h} \right) = \Delta V$$

$$\Delta V = 75 \frac{\text{km W}}{h}$$

20.  $B_w = 11 \text{ m/s } \leftarrow$   
 $W_G = 5.0 \text{ m/s } \downarrow$   
 $B_G = ?$

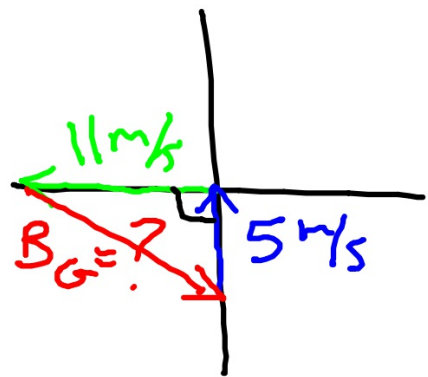
$$C^2 = a^2 + b^2$$

$$C^2 = 5^2 + 11^2$$

$$\sqrt{C^2} = 146$$

$$C = 12.08 \frac{\text{m}}{\text{s}} \Rightarrow$$

$$\boxed{12 \frac{\text{m}}{\text{s}}}$$



21.  $P_A = 185 \frac{\text{km}}{\text{h}} \text{ W}$

$W_G = 85 \frac{\text{km}}{\text{h}} \text{ NE}$

$$\frac{\sin \theta}{P_G} = \frac{\sin \phi}{P_A} \quad P_G = ?$$

$$\sin^{-1} \left( \frac{P_A \sin \theta}{P_G} \right) = 13.78^\circ$$

$$P_G^2 = P_A^2 + W_G^2 - 2 P_A W_G \cos \theta$$

$$P_G^2 = (185 \frac{\text{km}}{\text{h}})^2 + (85 \frac{\text{km}}{\text{h}})^2 - 2 \cdot 185 \frac{\text{km}}{\text{h}} \cdot 85 \frac{\text{km}}{\text{h}} \cdot \cos 135^\circ$$

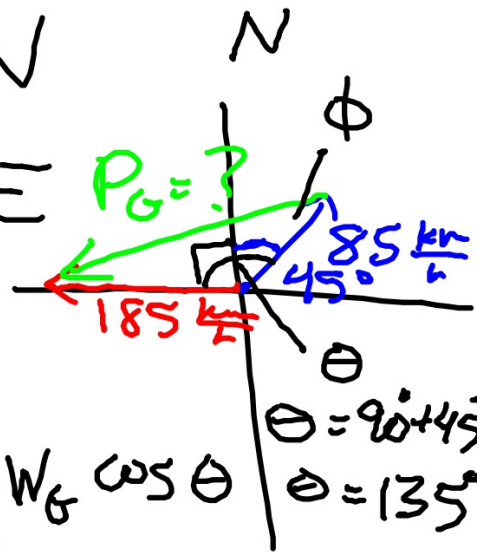
$90 - \phi - 45 = \phi$

$$P_G^2 = 63688.51$$

$\phi = 31.22$

$$P_G = 252.37$$

$$P_G = 250 @ 31^\circ \text{ SW}$$



22.



$$\sin \theta = \frac{0.17 \text{ km}}{2.7 \text{ km}}$$

$$\theta = \sin^{-1}\left(\frac{0.17}{2.7}\right) \quad \theta = 3.6^\circ$$

$$0.17 + 0.045 = 0.215$$

$$\sin \theta = \frac{0.215}{x}$$

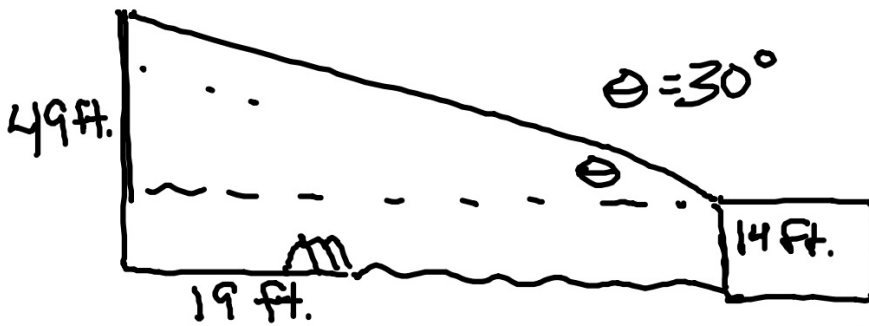
$$x = \frac{0.215}{\sin \theta}$$

$$\sin \theta = \frac{0.045}{x}$$

$$x = \frac{0.045 \text{ km}}{\sin \theta}$$
$$x = 0.71 \text{ km}$$

$x = 3.4 \text{ km}$  or an additional 0.71 km

23.



$$\tan \theta = \frac{\text{height}}{\text{dist.}}$$

$$\text{dist.} = \frac{\text{height}}{\tan \theta}$$

$$\text{dist.} = \frac{35 \text{ ft.}}{\tan 30}$$

$$\text{dist.} = 60.62 \text{ ft.} - 19 \text{ ft.}$$

$$\boxed{d = 42 \text{ ft.}}$$

$$h = 49 \text{ ft.} - 14 \text{ ft.}$$

$$h = 35 \text{ ft.}$$

distance to rocks  
from LH