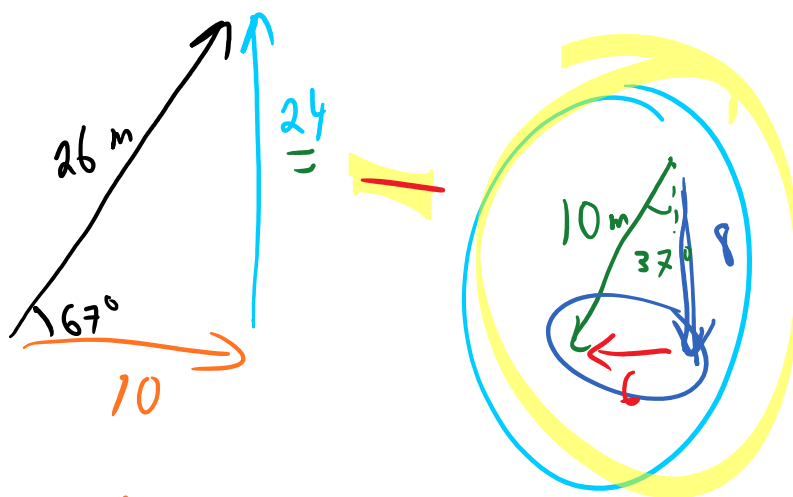
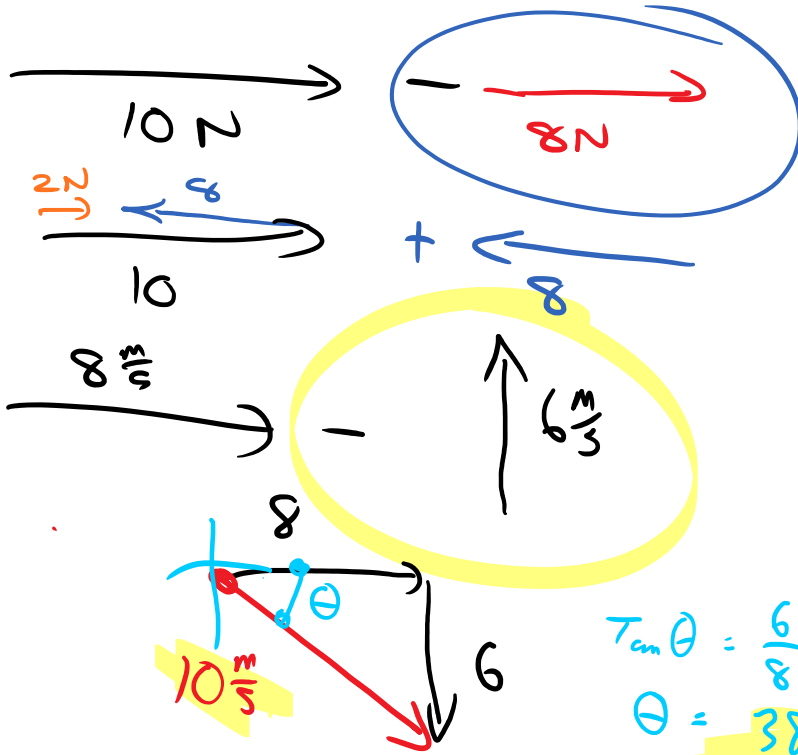


# Vector Subtraction

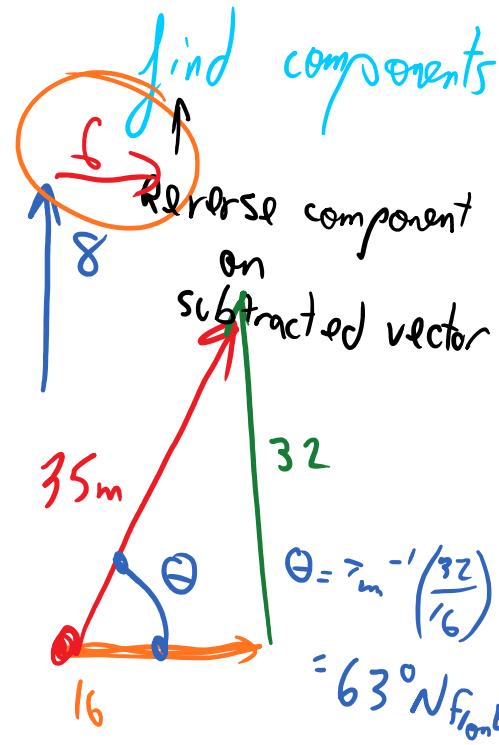
Thursday, October 28, 2010 11:24 AM



Never subtract a vector, instead add the opposite vector.



$x_{\text{TOT}} = 10 + 6 = 16$   
 $y_{\text{TOT}} = 24 + 8 = 32$



$V_1 + V_2 + \dots = V_{\text{result}}$

$$V_{\text{boat}} + V_{\text{current}} = V_{\text{shore}} \quad V_{\text{wind}}$$

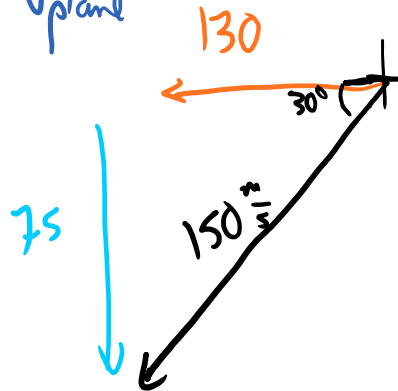
$$V_{\text{Boat}} = V_{\text{shore}} - V_{\text{current}}$$

$$* \quad V_{\text{plane}} + V_{\text{wind}} = V_{\text{ground}}$$

A plane needs ground speed 150 m/s at 30° S from (W) the wind speed is known to be 40 m/s [S] find the airspeed needed.

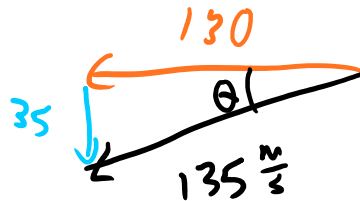
$$V_{\text{plane}} + V_{\text{wind}} = V_{\text{ground}} \Rightarrow V_{\text{wind}}$$

$$V_{\text{plane}} =$$

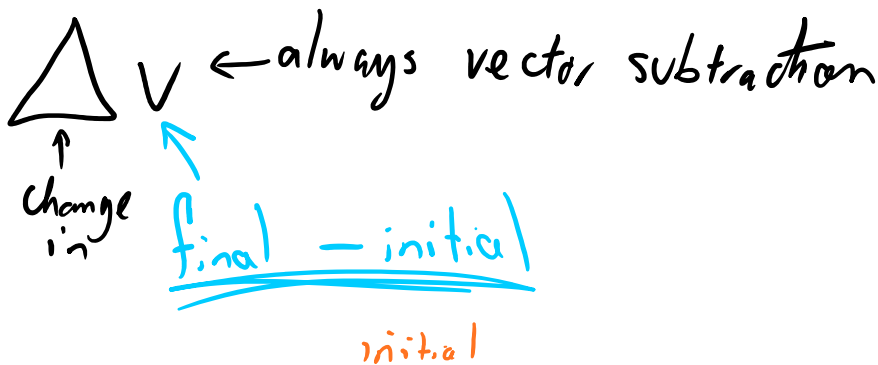


$$X_{\text{TOTAL}} = 130$$

$$Y_{\text{TOT}} = 75 \downarrow + 40 \uparrow = 35 \downarrow$$



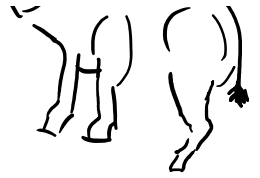
$$\theta = 15^\circ \text{ S from W}$$



A car is traveling at 25 m/s at 45° N from E LATER it is seen going due south at 10 m/s find the change in velocity!!!!

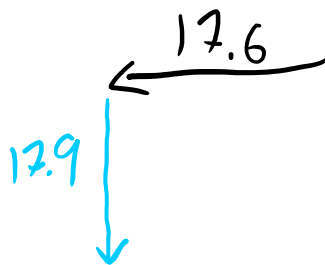
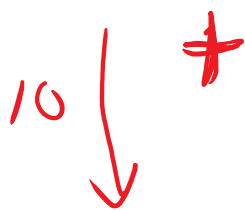
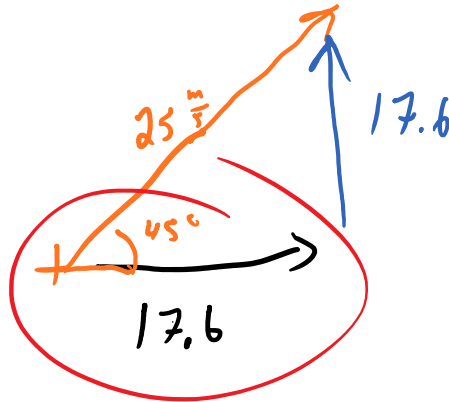
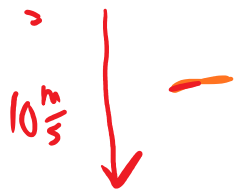


A car is traveling at  $25 \text{ m/s}$  due to the east. When it is seen going due south at  $10 \text{ m/s}$  find the change in velocity!!!!



final

$$\Delta V = V_f - V_0$$



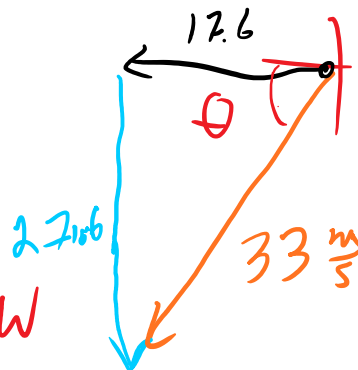
$$x_{TOT} = 17.6$$

$$y_{TOT} = 10\downarrow + 17.6\downarrow$$

$$= 27.6\downarrow$$

$$\tan^{-1}\left(\frac{27.6}{17.6}\right) = \theta$$

$57^\circ$  S from W



Vector Navigation

14, 3, 4, 5, 6, 9, 10, 12