

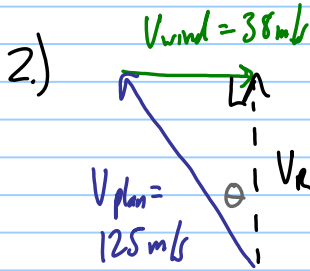
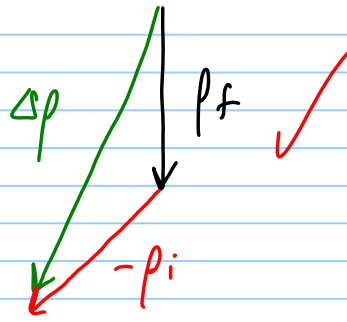
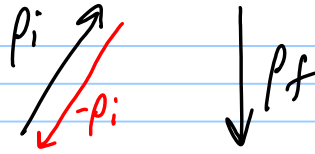
1) Draw a vector diagram that shows Δp given:



2) A plane can fly with a maximum air speed of 125 m/s. There is a wind blowing due east at 38 m/s. The plane must reach an airport that is directly north of its present location.

- a) What heading should the plane fly?
- b) If the airport is 38 km away, how long will it take to reach it?

$$1.) \Delta \vec{p} = \vec{p}_f - \vec{p}_i$$



$$a) \theta = \sin^{-1}\left(\frac{38}{125}\right) = 18^\circ (\text{W of N})$$

$$b) v_r = \sqrt{v_{\text{plane}}^2 - v_{\text{wind}}^2}$$
$$= \sqrt{125^2 - 38^2}$$
$$= 119.1 \text{ m/s}$$

$$v = \frac{d}{t} \quad t = \frac{d}{v} = \frac{38000 \text{ m}}{119.1 \text{ m/s}}$$
$$= \boxed{320 \text{ s}}$$