Physics 101Rec
Quiz#3
Chapter 4f

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Name: Key Id: Sect:

The pilot of an airplane flies due south relative to the ground with a speed of 400 Km/h. A wind is blowing at 40 Km/h due east.

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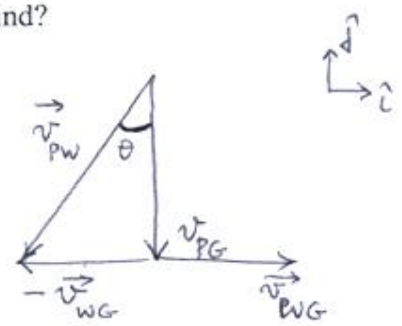
(a) What is the speed of the airplane relative to the wind?

$$\vec{v}_{PW} = \vec{v}_{PG} + \vec{v}_{GW}$$

$$= \vec{v}_{PG} - \vec{v}_{WG}$$



$$\vec{v}_{PW} = -400\hat{j} - 40\hat{i} \ (Km/h)$$

$$|\vec{v}_{PW}| = \sqrt{400^2 + 40^2} = 402 \ Km/h.$$

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(b) At what angle from the vertical shall the airplane travel in order to reach a city directly south of the original location?

$$\tan\theta = \frac{v_{WG}}{v_{PG}} \Rightarrow \theta = \tan^{-1}\left(\frac{-40}{-400}\right) = 5.7$$

(see the figure)