

Answer on question #64017, Physics / Other

Question A man driving a tractor in the N-E direction at 10kph observe the smoke from his exhaust to be blowing from the S-E direction. He estimate the speed of the smoke to be equal to that of the tractor. calculate the magnitude and direction of the speed of the wind.

Solution To find magnitude and speed of wind you have subtract the man's speed from the exhaust smoke speed. Its speed is 10 kph N-W. So the subtraction gives:

x-axis:

$$-10 \cos 45^\circ - 10 \cos 45^\circ = -20 \cos 45^\circ = -10\sqrt{2}$$

y-axis:

$$10 \sin 45^\circ - 10 \sin 45^\circ = 0$$

Thus, wind has speed of $10\sqrt{2}$ kph in W direction.