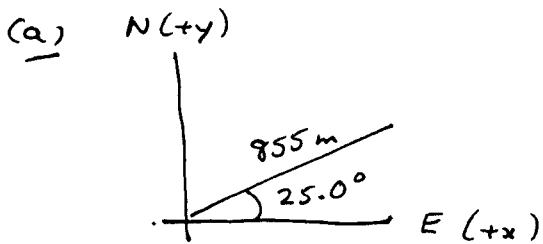
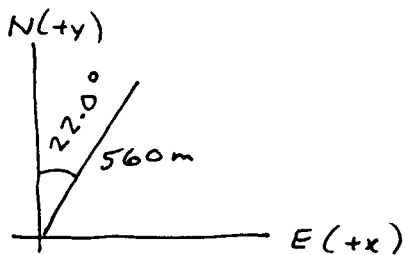


## Problem 7-25



$$\Delta x_a = (855 \text{ m}) \cos 25.0^\circ = 774.9 \text{ m}$$

$$\Delta y_a = (855 \text{ m}) \sin 25.0^\circ = 361.3 \text{ m}$$

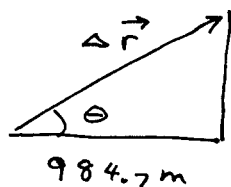


$$\Delta x_b = (560 \text{ m}) \sin 22.0^\circ = 209.8 \text{ m}$$

$$\Delta y_b = (560 \text{ m}) \cos 22.0^\circ = 519.2 \text{ m}$$

$$\therefore \text{total } \Delta x = (774.9 + 209.8) \text{ m} = 984.7 \text{ m}$$

$$\text{total } \Delta y = (361.3 + 519.2) \text{ m} = 880.5 \text{ m}$$



$$\Delta r = \sqrt{(880.5)^2 + (984.7)^2} \text{ m}$$
$$= 1.32 \times 10^3 \text{ m} \quad (1321 \text{ m})$$

$$\theta = \tan^{-1} \left( \frac{880.5}{984.7} \right) = 41.8^\circ$$

$$\therefore \Delta \vec{r} = 1.32 \times 10^3 \text{ m} \text{ at } 41.8^\circ \text{ N of E}$$

(b)

$$4.40 \text{ min} = 264 \text{ s}$$

$$\text{avg. speed} = \frac{\text{distance}}{\Delta t} = \frac{(855 + 560) \text{ m}}{264 \text{ s}} = 5.36 \text{ m/s}$$

$$\vec{v}_{\text{av}} = \frac{\Delta \vec{r}}{\Delta t} = \frac{1321 \text{ m}, 41.8^\circ \text{ N of E}}{264 \text{ s}}$$

$$= 5.00 \text{ m/s}, 41.8^\circ \text{ N of E}$$