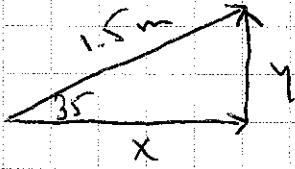


Vector Components

①



$$\sin 35 = \frac{y}{1.5}$$

$$\cos 35 = \frac{x}{1.5}$$

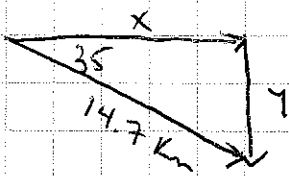
$$y = 1.5 \sin 35$$

$$x = 1.5 \cos 35$$

$$y = \boxed{0.86 \text{ m}}$$

$$x = \boxed{1.23 \text{ m}}$$

②



$$\cos 35 = \frac{x}{14.7}$$

$$\sin 35 = \frac{y}{14.7}$$

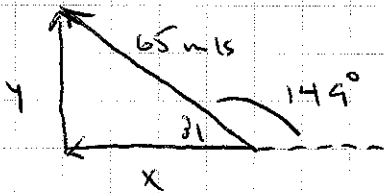
$$x = 14.7 \cos 35$$

$$y = -14.7 \sin 35$$

$$x = \boxed{12.0 \text{ km}}$$

$$y = \boxed{-8.4 \text{ km}}$$

③



$$\cos 31 = \frac{x}{65}$$

$$\sin 31 = \frac{y}{65}$$

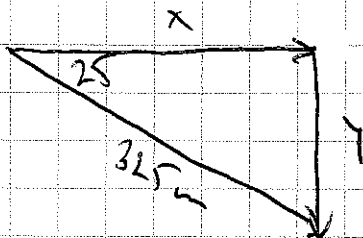
$$x = -65 \cos 31$$

$$y = 65 \sin 31$$

$$x = \boxed{-55.7 \text{ m/s}}$$

$$y = \boxed{33.5 \text{ m/s}}$$

④



$$\cos 25 = \frac{x}{325}$$

$$\sin 25 = \frac{y}{325}$$

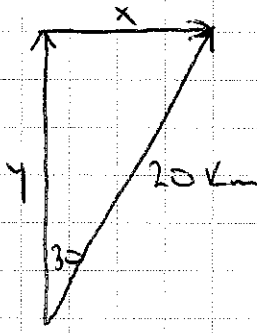
$$x = 325 \cos 25$$

$$y = 325 \sin 25$$

$$x = \boxed{294.6 \text{ m}}$$

$$y = \boxed{137.4 \text{ m}}$$

⑤



$$\sin 30 = \frac{x}{20}$$

$$\cos 30 = \frac{y}{20}$$

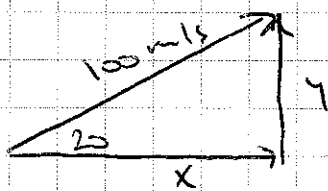
$$x = 20 \sin 30$$

$$y = 20 \cos 30$$

$$x = \boxed{10 \text{ km}}$$

$$y = \boxed{17.3 \text{ km}}$$

⑥



$$\cos 20 = \frac{x}{100}$$

$$\sin 20 = \frac{y}{100}$$

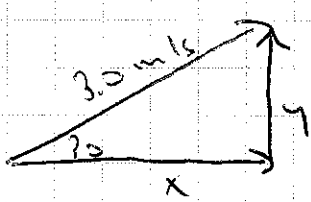
$$x = 100 \cos 20$$

$$y = 100 \sin 20$$

$$x = \boxed{94.0 \text{ m/s}}$$

$$y = \boxed{34.2 \text{ m/s}}$$

⑦



$$b) \cos 30 = \frac{x}{3}$$

$$a) \sin 30 = \frac{y}{3}$$

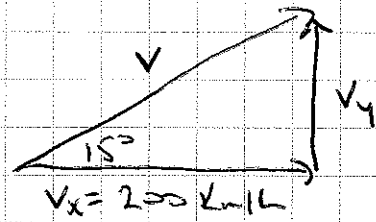
$$x = 3 \cos 30$$

$$y = 3 \sin 30$$

$$x = \boxed{2.6 \text{ m/s}}$$

$$y = \boxed{1.5 \text{ m/s}}$$

⑧



$$b) \tan 15 = \frac{V_y}{200}$$

$$a) \cos 15 = \frac{200}{V}$$

$$V_y = 200 \tan 15$$

$$V_y = 53.6 \text{ km/h}$$

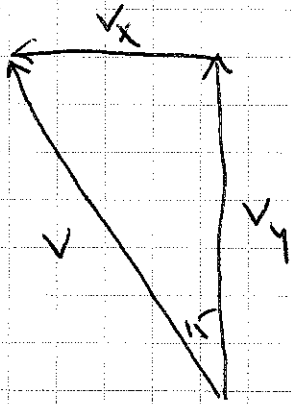
$$V = \frac{200}{\cos 15}$$

$$t = \frac{d}{v} = \frac{1 \text{ km}}{53.6 \text{ km/h}}$$

$$V = \boxed{207 \text{ km/h}}$$

$$= \boxed{0.019 \text{ h}}$$

9



$$v_y = \frac{d}{t}$$
$$= \frac{25 \text{ m}}{4 \text{ s}}$$

$$v_y = 6.25 \text{ m/s}$$

$$\cos 15 = \frac{v_y}{v}$$

$$\cos 15 = \frac{6.25}{v}$$

$$v = \frac{6.25}{\cos 15}$$

$$v = \boxed{6.47 \text{ m/s}}$$