

## Vector Subtraction

1.) Subtract the following vectors:

a.)  $12\text{ N}$  at  $40^\circ\text{ S of E}$  -  $6\text{ N}$  at  $20^\circ\text{ W of S}$

b.)  $1.8\frac{\text{m}}{\text{s}}$  at  $45^\circ\text{ W of N}$  -  $1.0\frac{\text{m}}{\text{s}}$  at  $70^\circ\text{ W of N}$

c.)  $17\text{ m}$  due east -  $5\text{ m}$  due west.

2.) A cat walks  $17\text{ m}$  due north. It is later seen  $22\text{ m}$  due east of its starting point. What was its change in displacement?

3.) A bird can fly at  $6.0\frac{\text{m}}{\text{s}}$  and is pointed due west. From the ground it appears to be travelling at  $10.0\frac{\text{m}}{\text{s}}$  at  $53^\circ\text{ S of W}$ , what is the wind's velocity?

Answers -

1a.)  $11.4\text{ N}$  at  $10.5^\circ\text{ S of E}$

1b.)  $0.99\frac{\text{m}}{\text{s}}$  at  $20^\circ\text{ W of N}$

1c.)  $22\text{ m}$  [E]

2.)  $27.8\text{ m}$  at  $38^\circ\text{ N of E}$

3.)  $8.0\frac{\text{m}}{\text{s}}$  due south