1 An object S of weight 60.0 N is supported by two ropes A and B, as shown in Fig. 1.1.

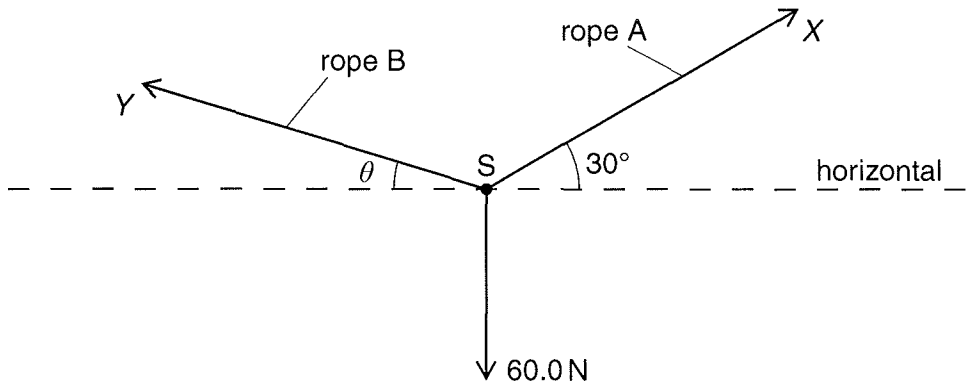

Fig. 1.1

Rope A is at 30° to the horizontal and exerts force X on S. Rope B is at an angle θ to the horizontal and exerts force Y on S.

The magnitude of force X is varied from 0 to 200 N. Rope A is always kept at 30° to the horizontal. The force Y is varied in magnitude and direction to keep S in equilibrium.

(a) Determine the magnitude and direction of force Y for the magnitude of force X equal to

(i) zero,

magnitude of Y = ... N

angle θ = ...°

[2]

(ii) 200 N.

magnitude of Y = ... N

angle θ = ...°

[3]