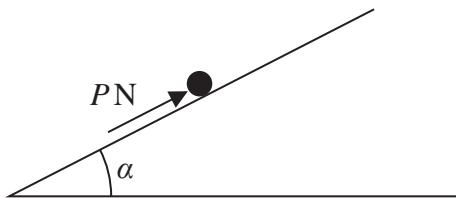


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**Figure 1**

A particle of mass 10kg is placed on a fixed rough inclined plane. The plane is inclined to the horizontal at an angle  $\alpha$ , where  $\tan \alpha = \frac{3}{4}$ . The particle is held in equilibrium by a force of magnitude  $P$  newtons, which acts up the plane, as shown in Figure 1. The line of action of the force lies in a vertical plane that contains a line of greatest slope of the plane. The coefficient of friction between the particle and the plane is  $\frac{1}{2}$ .

- (a) Find the normal reaction between the particle and the plane. (2)

(b) Find the greatest possible value of  $P$ . (4)

(c) Find the least possible value of  $P$ . (2)



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### **Question 3 continued**

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### **Question 3 continued**



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