# Name: Date:

Sample IB Questions on Trigonometry

1. José stands 1.38 kilometres from a vertical cliff.

José estimates the angle between the horizontal and the top of the cliff as 28.3° and uses it to find the height of the cliff.

Find the height of the cliff according to José’s calculation. **Express your answer in metres, to the nearest whole metre.**

**[3 marks]**

**2.** A room is in the shape of a cuboid. Its floor measures  m by  m and its height is  m.

a. Calculate the length of AC.

[2 marks]

 **b.** Calculate the length of AG.

**[2 marks]**

**c.** Calculate the angle that AG makes with the floor.

**[2 marks]**

 **3.** In the diagram,  . The length of the three sides are ,  and .

a. Write down and **simplify** a quadratic equation in  which links the three sides of the triangle.

[3 marks]

 **b.** Solve the quadratic equation found in part (a). [2 marks]

 **c.** Write down the value of the perimeter of the triangle. [1 mark]

**4.** Günter is at Berlin Tegel Airport watching the planes take off. He observes a plane that is at an angle of elevation of  from where he is standing at point . The plane is at a height of 350 metres. This information is shown in the following diagram.

a. Calculate the horizontal distance, , of the plane from Günter. **Give your answer to the nearest metre.** [3 marks]

The plane took off from a point , which is  metres from where Günter is standing, as shown in the following diagram.

Using your answer from part (a), calculate the angle , the takeoff angle of the plane. [3 marks]

 **5.** In triangle , ,  and .

***a.*** Find the length of . [2 marks]

 **b.**  is the point on  such that .

Find the length of . [2 marks]

 **c.**  is the point on  such that .

Find the area of triangle . [2 marks]

**6.** Tom stands at the top, T , of a vertical cliff  high and sees a fishing boat, F , and a ship, S . B represents a point at the bottom of the cliff directly below T . The angle of depression of the ship is  and the angle of depression of the fishing boat is  .

a. Calculate, SB, the distance between the ship and the bottom of the cliff. [2 marks]

 **b.** Calculate, SF, the distance between the ship and the fishing boat. Give your answer correct to the nearest metre. [4 marks]