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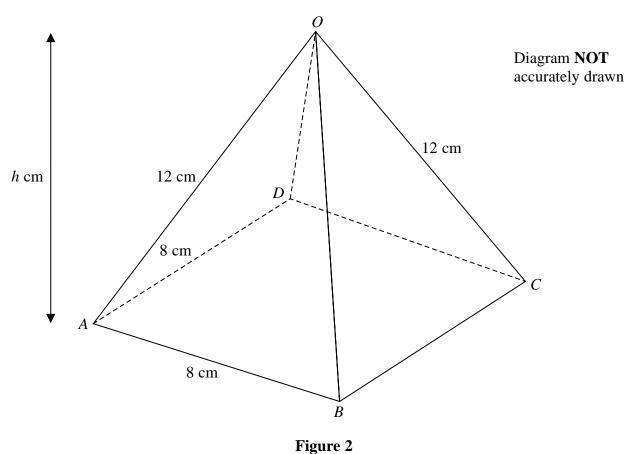


Figure 2 shows a right pyramid ABCDO with a horizontal square base of side 8 cm. The vertical height of the pyramid is h cm and OA = OB = OC = OD = 12 cm.

(a) Find the exact value of h.

(3)

(b) Find, to 1 decimal place, the size of the angle between OA and the plane ABCD.

(2)

(c) Find, to 1 decimal place, the size of the angle between the plane AOB and the plane ABCD.

(2)

The midpoint of OA is P and Q is the point on BC such that BQ : QC = 3:1

(d) Show that $PQ = 4\sqrt{5}$ cm.

(4)

(e) Find, to 1 decimal place, the size of angle *PQA*.

(4)

Qı	nestion 10 continued

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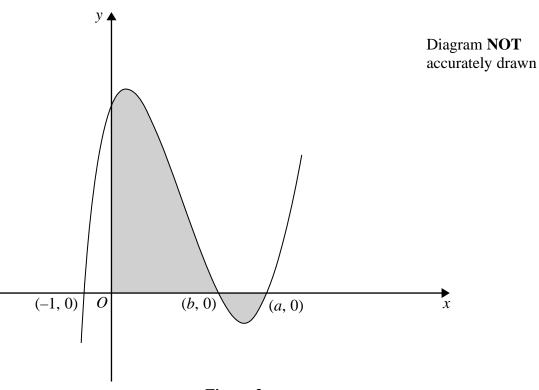


Figure 3

Figure 3 shows a sketch of the curve with equation y = f(x), which passes through the points with coordinates (-1, 0), (b, 0) and (a, 0) where 0 < b < a.

Given that $f'(x) = 6x^2 - 26x + 12$

- (a) find,
 - (i) the value of a,
 - (ii) the value of b.

(8)

(b) Use algebraic integration to determine the exact value of the total area of the shaded regions shown in Figure 3.

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