

- 1 (a) Simplify.

$$\frac{18y^6}{(3y)^2}$$

(a) [2]

- (b) Expand and simplify.

$$(3x - 2)^2$$

(b) [2]

4	
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- 2 (a) Calculate.

$$(2 \times 10^5) + (8 \times 10^3)$$

(a) [2]

- (b) Estimate the value of
- $\frac{4.16 \times 10^9}{(4.83 \times 10^{-3}) \times (2.31 \times 10^6)}$
- .

Give your answer in standard form.

(b) [3]

5	
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3



Fabien is practising taking penalties.
There are three possible independent outcomes.

- He scores a goal.
- He misses the goal.
- The goalkeeper saves the penalty.

The probability that he scores a goal is $\frac{3}{8}$.

The probability that the goalkeeper saves the penalty is $\frac{1}{2}$.

Fabien takes 2 penalties.

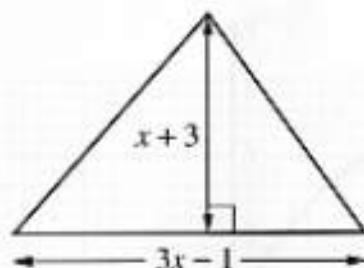
What is the probability that Fabien scores at least one goal?

[4]

4

- 4 In this question, all the lengths are in centimetres.

A triangle has a perpendicular height of $(x + 3)$ and a base of $(3x - 1)$.



- (a) The area of the triangle is 24 cm^2 .
Show that

$$3x^2 + 8x - 51 = 0.$$

.....

 [3]

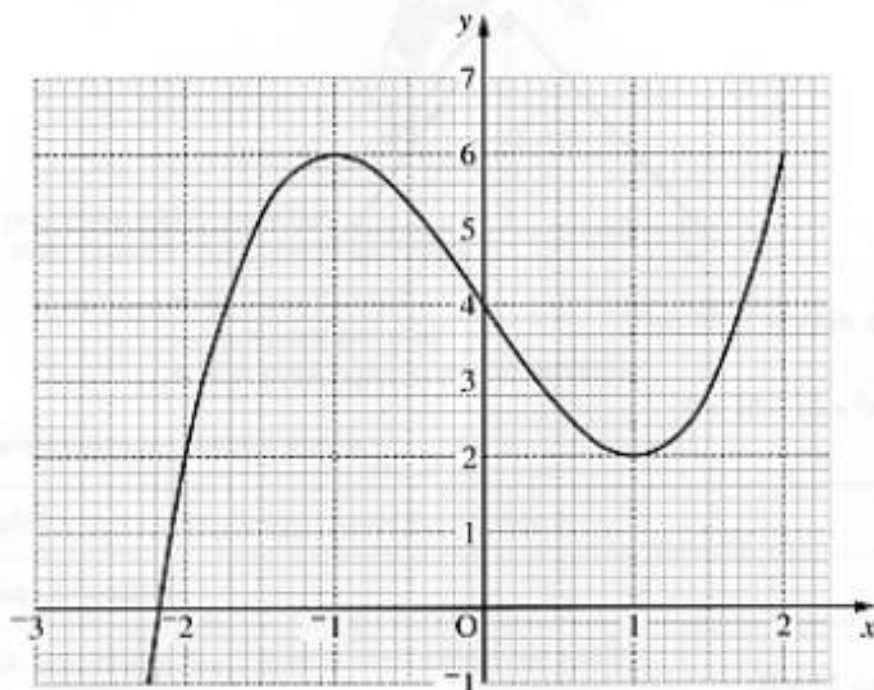
- (b) Solve $3x^2 + 8x - 51 = 0$.
Hence, find the length of the base of the triangle.

(b).....cm [3]

6	
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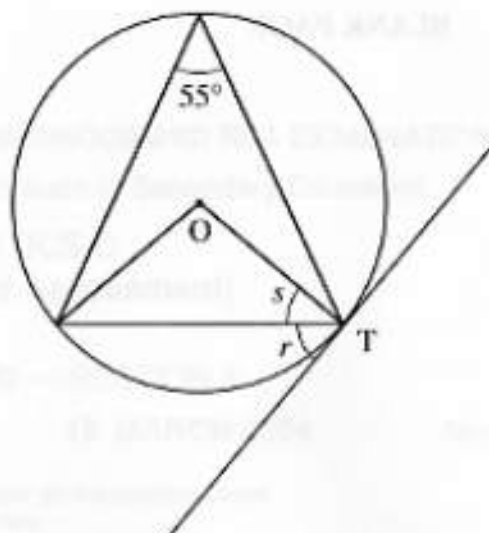
- 5 The graph of $y = x^3 - 3x + 4$ is drawn below.

By adding a straight line to the graph, solve the equation $x^3 - 3x + 4 = x + 3$.



$x = \dots\dots\dots$ [3]

3



Not to scale

O is the centre of the circle.

T is the point of contact of a tangent to the circle.

Work out angles r and s .

Give a reason for each answer.

$r = \dots\dots\dots^\circ$ because $\dots\dots\dots$

$s = \dots\dots\dots^\circ$ because $\dots\dots\dots$

[3]

3

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is 30.

Not Permitted
You are not allowed to use a calculator in Section A of this paper.

MARK SCHEME FOR SECTION A

Section A	
Section B	
Total	

This question paper consists of 7 printed pages and 1 blank page.