Algebra functions – AS Mathematics P2

1. June/2022/Paper_7356/02/No.4

The equation $9x^2 + 4x + p^2 = 0$ has no real solutions for x.

Find the set of possible values of p.

Fully justify your answer.

[4 marks]

2. June/2022/Paper_7356/02/No.5

Kaya is investigating the function

$$f(x) = 2x^3 - 7x^2 - 12x + 45$$

Kaya makes two statements.

Statement 1: $f(3) = 0$

Statement 2: this shows that $(x + 3)$ must be a factor of $f(x)$.

(a) State, with a reason, whether each of Kaya's statements is correct.

[2 marks]

Statement 1: _____

_____

_____

_____

Statement 2: _____

_____

_____

_____

(b) Fully factorise $f(x)$.

[3 marks]

_____

_____

_____

_____

_____

_____

3. June/2022/Paper_7356/02/No.7

The expression

$$\frac{3-\sqrt{n}}{2+\sqrt{n}}$$

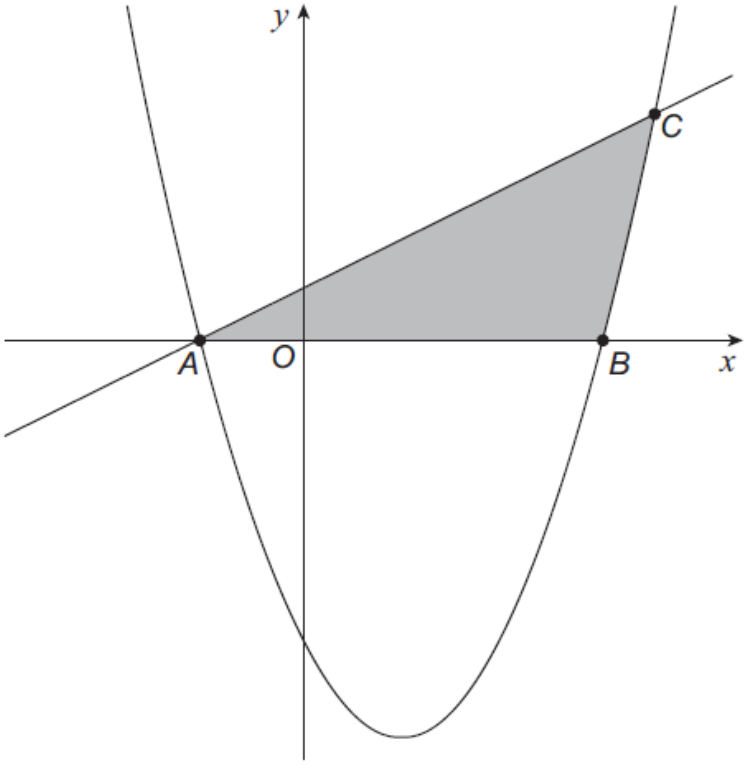
can be written in the form $a+b\sqrt{n}$, where a and b and n are rational but $\sqrt{n}$ is irrational.

Find expressions for a and b in terms of n.

[4 marks]

4. June/2022/Paper_7356/02/No.9(a, b)

The diagram below shows the graphs of $y = x^2 - 4x - 12$ and $y = x + 2$



(a) Write down three inequalities which together describe the shaded region.

[2 marks]

(b) Find the coordinates of the points A, B and C.

[4 marks]