

爱德思
Pure Mathematics 2
分类真题
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A Level Clouds 出品

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Chapter 1

Algebraic Methods

3.

$$f(x) = 10x^3 + 27x^2 - 13x - 12$$

(a) Find the remainder when $f(x)$ is divided by

(i) $x - 2$

(ii) $x + 3$

(b) Hence factorise $f(x)$ completely.

(3)

(4)

Leave
blank

10.

$$f(x) = 6x^3 + ax^2 + bx - 5$$

where a and b are constants.

When $f(x)$ is divided by $(x + 1)$ there is no remainder.

When $f(x)$ is divided by $(2x - 1)$ the remainder is -15

(a) Find the value of a and the value of b .

(5)

(b) Factorise $f(x)$ completely.

(4)

Leave
blank

2.

$$f(x) = x^4 - x^3 + 3x^2 + ax + b$$

where a and b are constants.

When $f(x)$ is divided by $(x - 1)$ the remainder is 4

When $f(x)$ is divided by $(x + 2)$ the remainder is 22

Find the value of a and the value of b .

(5)

Leave
blank

6.

$$f(x) = x^3 + x^2 - 12x - 18$$

(a) Use the factor theorem to show that $(x + 3)$ is a factor of $f(x)$.

(2)

(b) Factorise $f(x)$.

(2)

(c) Hence find exact values for all the solutions of the equation $f(x) = 0$

(3)

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blank

7.

$f(x) = 3x^3 + ax^2 + bx - 10$, where a and b are constants.

Given that $(x - 2)$ is a factor of $f(x)$,

- (a) use the factor theorem to show that $2a + b = -7$

(2)

Given also that when $f(x)$ is divided by $(x + 1)$ the remainder is -36

- (b) find the value of a and the value of b .

(4)

$f(x)$ can be written in the form

$f(x) = (x - 2)Q(x)$, where $Q(x)$ is a quadratic function.

- (c) (i) Find $Q(x)$.

(ii) Prove that the equation $f(x) = 0$ has only one real root.

You must justify your answer and show all your working.

(4)

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4.

$$f(x) = 6x^3 - 7x^2 - 43x + 30$$

(a) Find the remainder when $f(x)$ is divided by

- (i) $2x + 1$
- (ii) $x - 3$

(b) Hence factorise $f(x)$ completely.

(4)

(4)

Leave
blank

5.

$$f(x) = -4x^3 + 16x^2 - 13x + 3$$

- (a) Use the remainder theorem to find the remainder when $f(x)$ is divided by $(x - 1)$.

(2)

- (b) Use the factor theorem to show that $(x - 3)$ is a factor of $f(x)$.

(2)

- (c) Hence fully factorise $f(x)$.

(4)

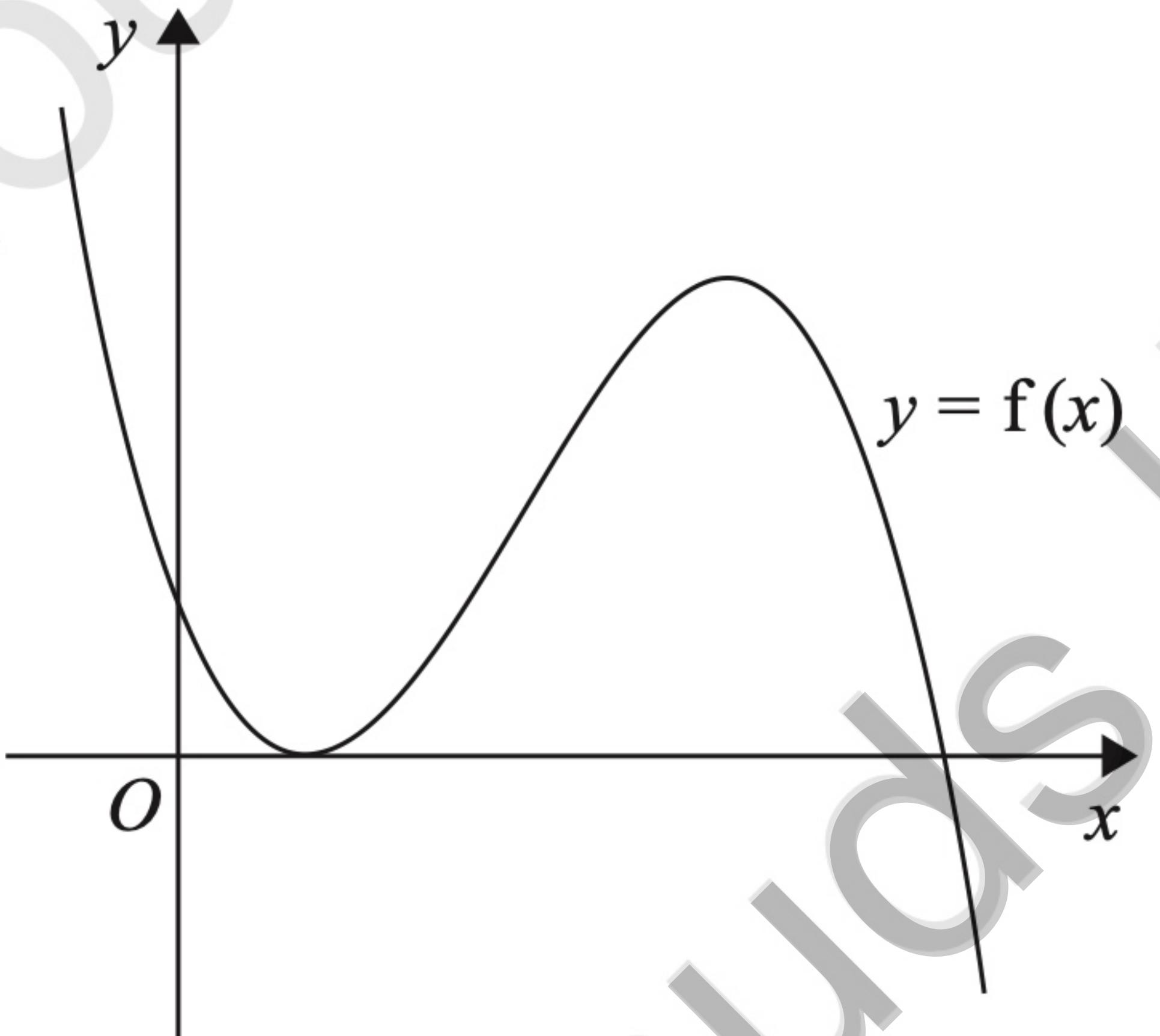


Figure 1

Figure 1 shows a sketch of part of the curve with equation $y = f(x)$.

- (d) Use your answer to part (c) and the sketch to deduce the set of values of x for which $f(x) \leq 0$

(2)