Polynomial Functions

January 2014

Question 26   2 marks

One of the factors of $P(x) = x^3 - kx^2 - 7x + 10$ is $(x - 2)$.

Find the value of k.

Question 35   1 mark

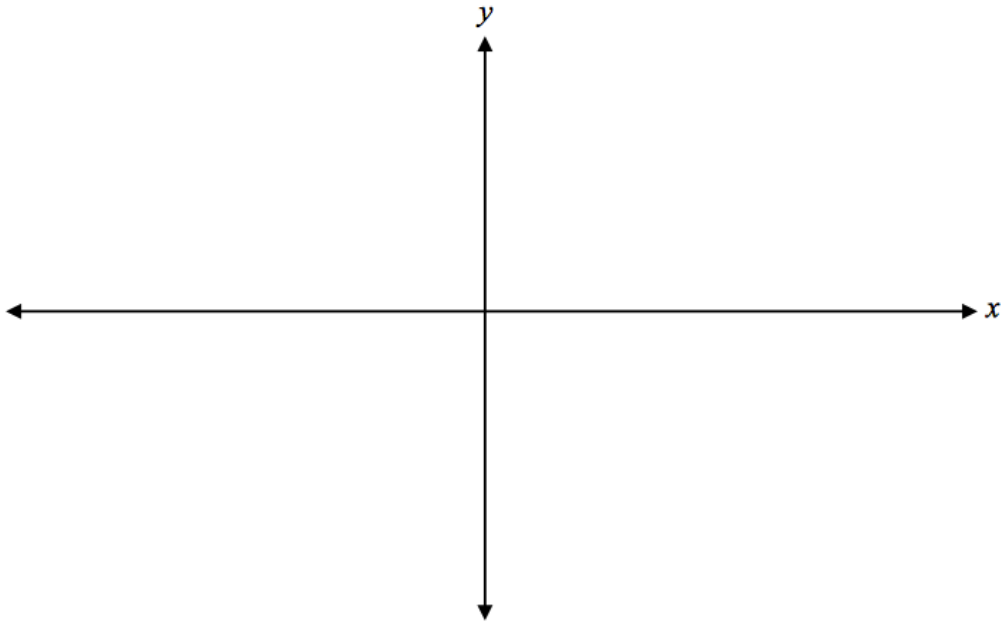When $P(x)$ is divided by $x - 3$, it has a quotient of $2x^2 + x - 6$ and a remainder of 4.

Determine $P(x)$.

Question 40   4 marks

Sketch the graph of $y = x^3 + x^2 - 5x + 3$ given that one of the x-intercepts is 1.

Identify the x-intercepts and y-intercept.

June 2013

Question 44   2 marks

Is $(x - 3)$ a factor of $x^4 - x^3 - 3x^2 + x - 1$?

Justify your anwer.

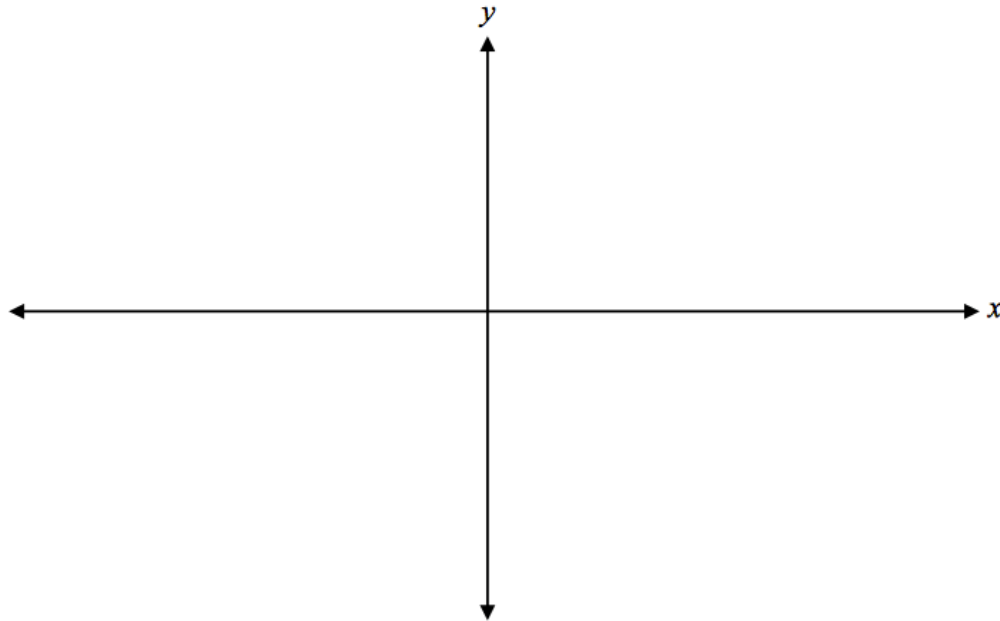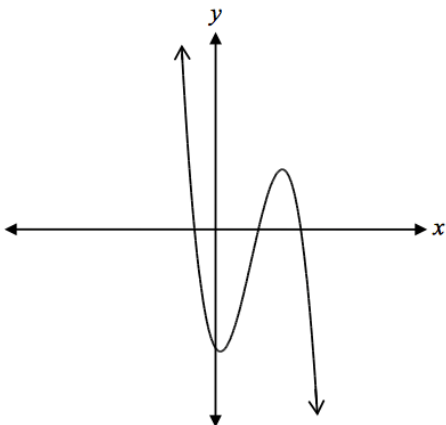## Question 29   3 marks

Sketch the graph of:

$$f(x) = (2 - x)(x + 3)(x + 1)^2$$

Label the *x*-intercepts and *y*-intercept.

Question 31   1 mark

The graph below represents the equation $y = ax^3 + 6x^2 + 5x - 10$.

What must be true about the value of *a*? Explain your reasoning.