
 1. A function f is defined on a suitable domain by $f(x) = \frac{1}{\sqrt{x^2 - 2x - 3}}$.

Find the values of $x \in \mathbb{R}$ for which f is undefined.

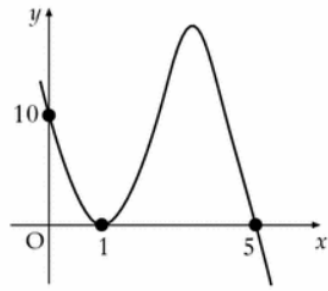
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 2. The roots of the equation $(x-1)(x+k) = -4$ are equal.

Find the values of k .


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3. The diagram shows part of the graph of a cubic.




Find the equation of the cubic in the form $y = ax^3 + bx^2 + cx + d$.

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 4. When $f(x) = px^3 - 13x + 2q$ is divided by $(x+2)$, the remainder is 30.

One factor of $f(x)$ is $(x-3)$. Find the values of p and q .

6

-  5. Show that $(x-3)$ is a factor of $4x^3 - 12x^2 - x + 3$ and hence solve the equation $4x^3 - 12x^2 + 7x + 8 = 8x + 5$.

Answers to Homework 6 - Polynomials

1. Undefined for $-1 \leq x \leq 3$

2. $k = -5, k = 3$

3. $y = -2x^3 + 14x^2 - 22x + 10$

4. $p = 1, q = 6$

5. $x = 3, x = \frac{1}{2}, x = -\frac{1}{2}$