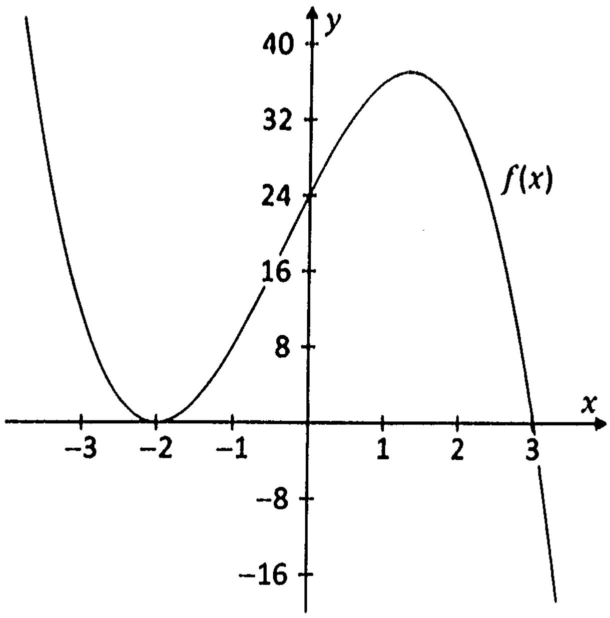
(b) The graph of the function $f(x) = ax^3 + bx^2 + cx + d$, where $x \in \mathbb{R}$ and $a, b, c, d \in \mathbb{Z}$ is shown in the diagram below.



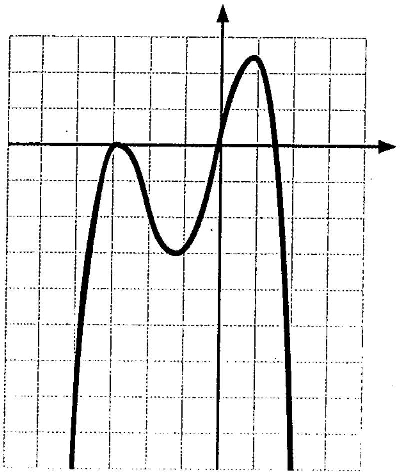
Find the values of a, b, c and d.

$a =$ $b =$ $c =$ $d =$

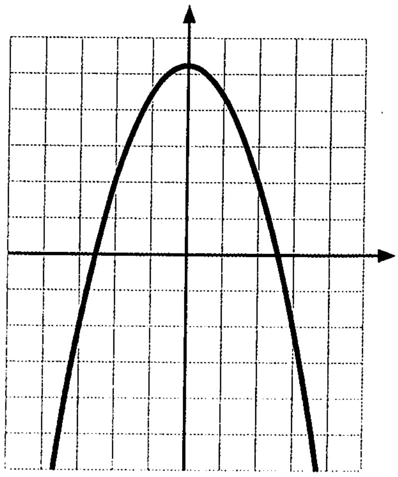
Question 4 **(25 marks)**

(a) **(i)** The graphs of three polynomials are shown below. Match each polynomial with its correct graph. One polynomial has no matching graph.

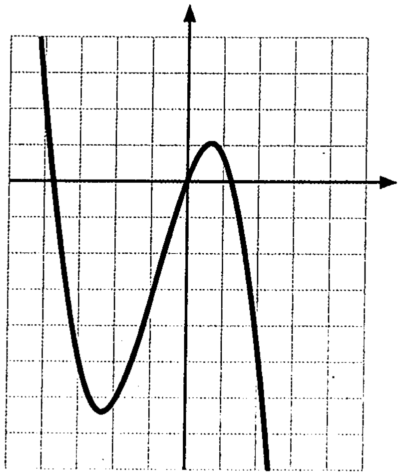
Graph A



Graph B

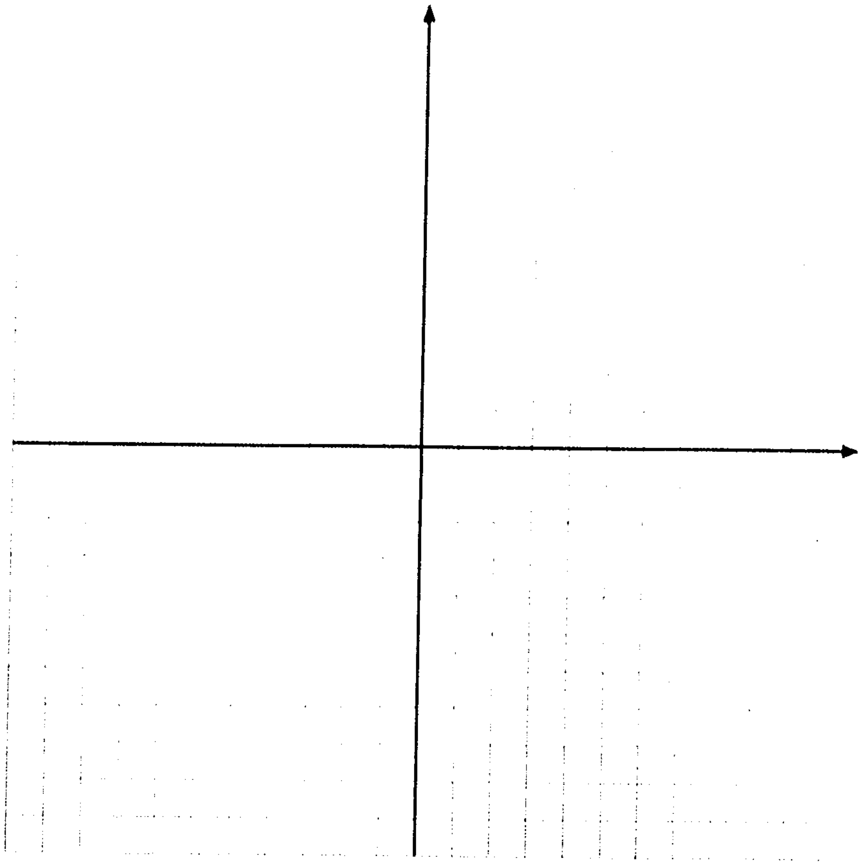


Graph C



Function	Graph
$h(x) = (-x + 2)(x + 2)$	
$f(x) = -x(x + 3)(x - 1)$	
$g(x) = -x(x + 2)^2(x - 1)$	
$t(x) = x(x + 2)^2(x + 1)$	

(ii) Sketch the graph $p(x) = (x - 2)^2(x)(x + 1)$.



(b) **(i)** On the same axes and scales, graph the functions $f(x) = |x - 2|$ and $g(x) = 3$. Using your graph, find the values for x where $f(x) = g(x)$.