

## Quartics:

Examples:

1. Sketch the curve with equation  $y = x(x + 1)(x - 2)(x - 3)$

2. Sketch the curve with equation  $y = (x - 2)^2(x + 1)(3 - x)$

3. Sketch the curve with equation  $y = (x + 1)(x - 1)^3$

4. Sketch the curve with equation  $y = (x - 2)^4$

## Test Your Understanding

1. Sketch the curve with equation  $y = x^2(x + 1)(x - 1)$

2. Sketch the curve with equation  $y = -(x + 1)(x - 3)^3$

Extension:

[STEP 1 2012 Q2a]

- a. Sketch  $y = x^4 - 6x^2 + 9$
- b. For what values of  $b$  does the equation  $y = x^4 - 6x^2 + b$  have the following number of distinct roots (i) 0, (ii) 1, (iii) 2, (iv) 3, (v) 4.