Quartics:

Examples:

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

2. Sketch the curve with equation $y=\left(x-2\right)^{2}(x+1)(3-x)$

3. Sketch the curve with equation $y=\left(x+1\right)\left(x-1\right)^{3}$

4. Sketch the curve with equation $y=\left(x-2\right)^{4}$

Test Your Understanding

1. Sketch the curve with equation $y=x^{2}\left(x+1\right)\left(x-1\right)$

2. Sketch the curve with equation $y=-(x+1)\left(x-3\right)^{3}$

Extension:

*[STEP I 2012 Q2a]*

1. Sketch $y=x^{4}-6x^{2}+9$
2. 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.

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