Exercise 6.2

1. Sketch the graph for each of the following functions, indicating the points of intersection of the curve with the x and y axes.

(a) $y = x(x + 1)(x - 2)$ (b) $y = (x + 1)^2(x - 2)$

(c) $y = (x - 2)^3$ (d) $y = x^3 - 2x$

(e) $y = x^3 - 3x^2 + 2x$ (f) $y = x^4 + x^2 - 2$

(g) $y = x^4 + x^3 - 7x^2 - x + 6$

2. Sketch the graph for each of the following functions, indicating the maximum and minimum points.

(a) $y = (1 - x^2)(4 - x^2)$ (b) $y = 3x^4 - 16x^3 + 18x^2$

(c) $y = 3x^5 - 10x^3 + 10$

3. Sketch the graph for each of the following functions.

(a) $y = \frac{1}{2}x^2$ (b) $y = 3x^3$ (c) $y = -5x^5$

(d) $y = -7x^6$ (e) $y = 4x^{\frac{3}{4}}$ (f) $y = -2x^{-\frac{2}{5}}$

4. Sketch, on separate diagrams, the graphs of each of the following curves.

(a) $y = x(1 - x^2)$ (b) $y^2 = x(1 - x^2)$

5. Sketch the graph for each of the following functions, showing clearly the asymptotes.

(a) $y = \frac{2}{1 + x}$ (b) $y = \frac{x + 1}{(x - 1)(x - 2)}$ (c) $y = \frac{x - 1}{x(x + 1)}$

(d) $y = \frac{1 - x}{1 + 2x}$ (e) $y = \frac{x^2}{1 + x}$

6. Sketch, on separate diagrams, the graphs of each of the following curves.

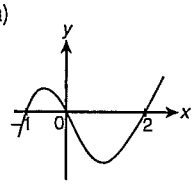
(a) $y = \frac{x}{1 + x}$ (b) $y^2 = \frac{x}{1 + x}$

7. Sketch the graph of each of the following functions, showing, where they exist, the asymptotes and axes of symmetry.

(a) $y^2 = \frac{1}{x(x - 1)}$ (b) $y = \frac{1}{x^2(x^2 - 4)}$ (c) $y^2 = (x - 1)(x + 2)$

Exercise 6.2

1. (a)



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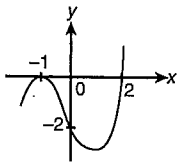

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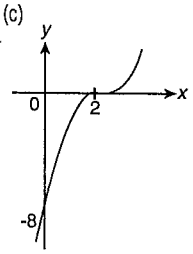

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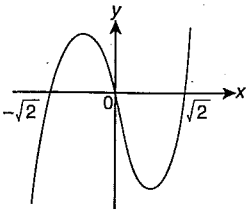

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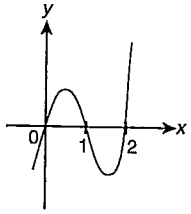

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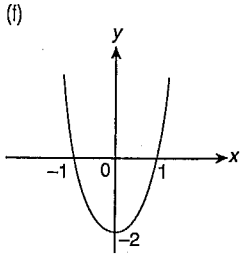

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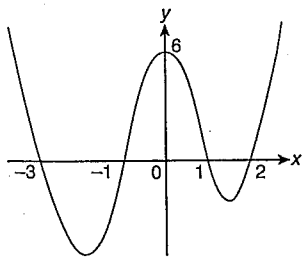

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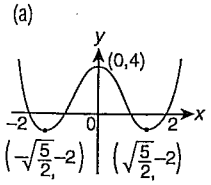

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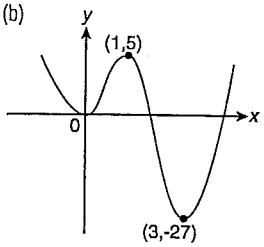

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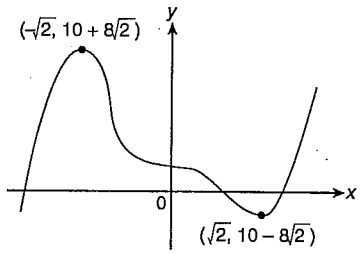

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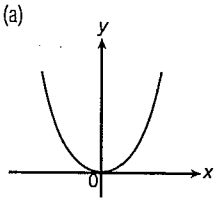

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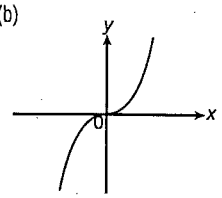

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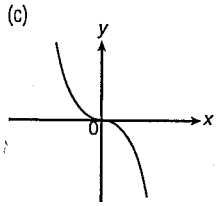

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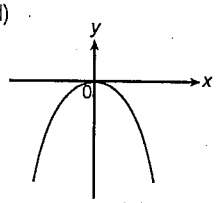

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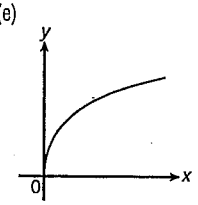

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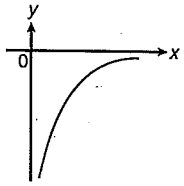

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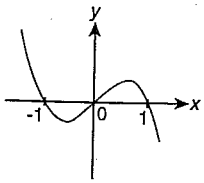

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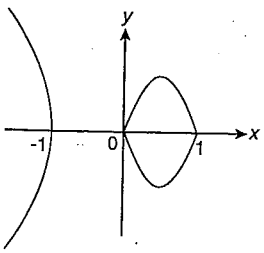

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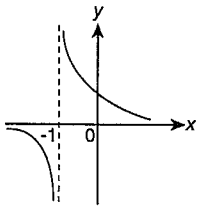

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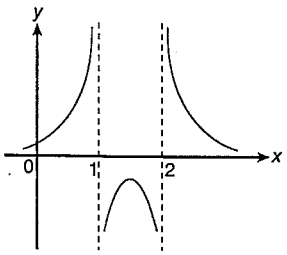

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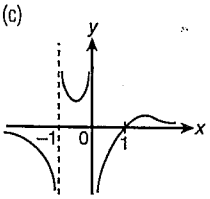

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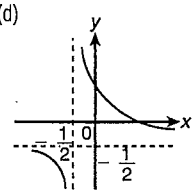

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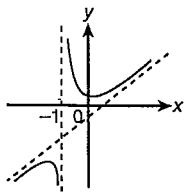

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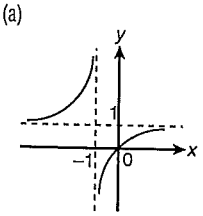

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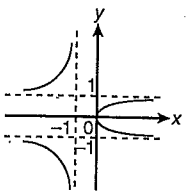

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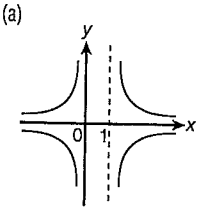

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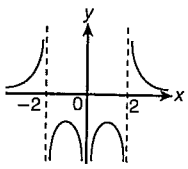

(c)