

Polynomials - End Behavior

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Describe the end behavior of each function.

1) $f(x) = x^3 + 10x^2 + 32x + 34$

2) $f(x) = -x^2 - 8x - 15$

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

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

5) $f(x) = -x^3 + 2x^2 + 2$

6) $f(x) = x^4 - x^2 - 2$

7) $f(x) = x^3 - 3x^2 + 1$

8) $f(x) = x^5 - 4x^3 + x + 1$

9) $f(x) = -x^5 + 4x^3 - 5x - 4$

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

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

12) $f(x) = -x^5 + 4x^3 - 2x - 2$

13) $f(x) = x^4 - 4x^2 - x + 5$

Sketch the general shape of each function.

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

15) $f(x) = x^5 - 3x^3 + 2x + 4$

16) $f(x) = -x^3 + x^2 - 1$

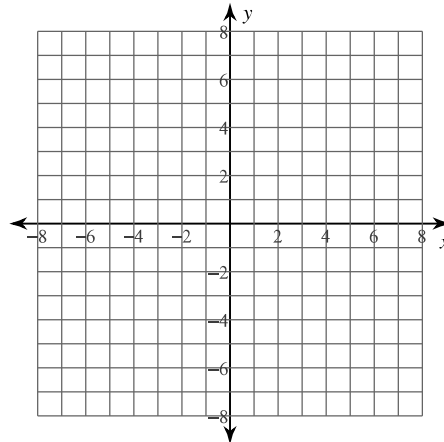
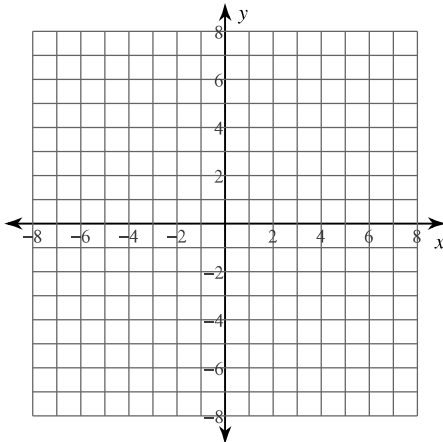
17) $f(x) = -x^4 + 3x^2 - 2x - 4$

18) $f(x) = 2x^2 - 3$

State the maximum number of turns the graph of each function could make. Then sketch the graph.

19) $f(x) = -x^3 + 3x^2 - 2$

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



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Describe the end behavior of each function.

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|------------------------------------|---|-----------------------------------|---|
| 1) $f(x) = x^3 + 10x^2 + 32x + 34$ | $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$ | 2) $f(x) = -x^2 - 8x - 15$ | $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$ |
| | $f(x) \rightarrow +\infty$ as $x \rightarrow +\infty$ | | $f(x) \rightarrow -\infty$ as $x \rightarrow +\infty$ |
| 3) $f(x) = -x^4 + x^2 + 2$ | $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$ | 4) $f(x) = x^4 - 4x^2 - x + 3$ | $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$ |
| | $f(x) \rightarrow -\infty$ as $x \rightarrow +\infty$ | | $f(x) \rightarrow +\infty$ as $x \rightarrow +\infty$ |
| 5) $f(x) = -x^3 + 2x^2 + 2$ | $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$ | 6) $f(x) = x^4 - x^2 - 2$ | $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$ |
| | $f(x) \rightarrow -\infty$ as $x \rightarrow +\infty$ | | $f(x) \rightarrow +\infty$ as $x \rightarrow +\infty$ |
| 7) $f(x) = x^3 - 3x^2 + 1$ | $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$ | 8) $f(x) = x^5 - 4x^3 + x + 1$ | $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$ |
| | $f(x) \rightarrow +\infty$ as $x \rightarrow +\infty$ | | $f(x) \rightarrow +\infty$ as $x \rightarrow +\infty$ |
| 9) $f(x) = -x^5 + 4x^3 - 5x - 4$ | $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$ | 10) $f(x) = -x^3 + 3x^2 - 4$ | $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$ |
| | $f(x) \rightarrow -\infty$ as $x \rightarrow +\infty$ | | $f(x) \rightarrow -\infty$ as $x \rightarrow +\infty$ |
| 11) $f(x) = x^4 - 3x^2 - 3x + 4$ | $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$ | 12) $f(x) = -x^5 + 4x^3 - 2x - 2$ | $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$ |
| | $f(x) \rightarrow +\infty$ as $x \rightarrow +\infty$ | | $f(x) \rightarrow -\infty$ as $x \rightarrow +\infty$ |
| 13) $f(x) = x^4 - 4x^2 - x + 5$ | $f(x) \rightarrow +\infty$ as $x \rightarrow -\infty$ | | |
| | $f(x) \rightarrow +\infty$ as $x \rightarrow +\infty$ | | |

Sketch the general shape of each function.

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

15) $f(x) = x^5 - 3x^3 + 2x + 4$

16) $f(x) = -x^3 + x^2 - 1$

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

18) $f(x) = 2x^2 - 3$

State the maximum number of turns the graph of each function could make. Then sketch the graph.

19) $f(x) = -x^3 + 3x^2 - 2$

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

