

Graphing Polynomial Functions: Basic Shape

Date _____ Period _____

Describe the end behavior of each function.

1) $f(x) = x^3 - 4x^2 + 7$

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

3) $f(x) = x^3 - 9x^2 + 24x - 15$

4) $f(x) = x^2 - 6x + 11$

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

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

7) $f(x) = 2x^2 + 12x + 12$

8) $f(x) = x^2 - 8x + 18$

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

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

10) $f(x) = -x^2 - 1$

11) $f(x) = x^4 - 4x^2 + x - 1$

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

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

14) $f(x) = -x^4 + 4x^2 + 3x - 1$

Sketch the general shape of each function.

15) $f(x) = -x^2 - 6x - 7$

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

17) $f(x) = x^2 + 2$

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

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

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

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

22) $f(x) = -x^3 + 10x^2 - 33x + 32$

Graphing Polynomial Functions: Basic Shape

Describe the end behavior of each function.

1) $f(x) = x^3 - 4x^2 + 7$

$f(x) \rightarrow -\infty \text{ as } x \rightarrow -\infty$

$f(x) \rightarrow +\infty \text{ as } x \rightarrow +\infty$

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

$f(x) \rightarrow -\infty \text{ as } x \rightarrow -\infty$

$f(x) \rightarrow +\infty \text{ as } x \rightarrow +\infty$

3) $f(x) = x^3 - 9x^2 + 24x - 15$

$f(x) \rightarrow -\infty \text{ as } x \rightarrow -\infty$

$f(x) \rightarrow +\infty \text{ as } x \rightarrow +\infty$

4) $f(x) = x^2 - 6x + 11$

$f(x) \rightarrow +\infty \text{ as } x \rightarrow -\infty$

$f(x) \rightarrow +\infty \text{ as } x \rightarrow +\infty$

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

$f(x) \rightarrow -\infty \text{ as } x \rightarrow -\infty$

$f(x) \rightarrow +\infty \text{ as } x \rightarrow +\infty$

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

$f(x) \rightarrow -\infty \text{ as } x \rightarrow -\infty$

$f(x) \rightarrow -\infty \text{ as } x \rightarrow +\infty$

7) $f(x) = 2x^2 + 12x + 12$

$f(x) \rightarrow +\infty \text{ as } x \rightarrow -\infty$

$f(x) \rightarrow +\infty \text{ as } x \rightarrow +\infty$

8) $f(x) = x^2 - 8x + 18$

$f(x) \rightarrow +\infty \text{ as } x \rightarrow -\infty$

$f(x) \rightarrow +\infty \text{ as } x \rightarrow +\infty$

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

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

Max # Turns: 4

10) $f(x) = -x^2 - 1$

Max # Turns: 1

11) $f(x) = x^4 - 4x^2 + x - 1$

Max # Turns: 3

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

Max # Turns: 3

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

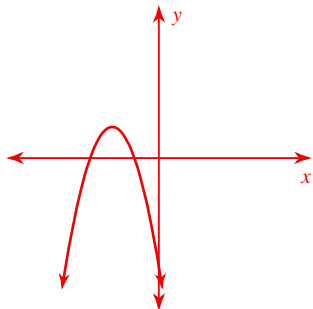
Max # Turns: 2

14) $f(x) = -x^4 + 4x^2 + 3x - 1$

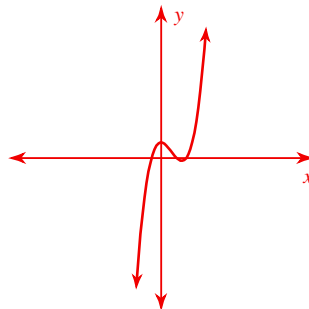
Max # Turns: 3

Sketch the general shape of each function.

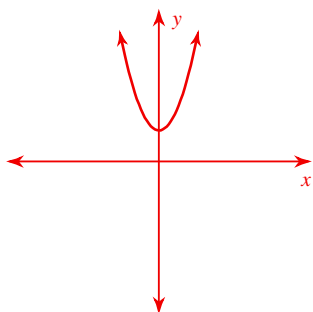
15) $f(x) = -x^2 - 6x - 7$



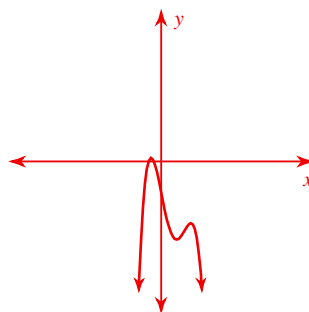
16) $f(x) = x^3 - 2x^2 + 1$



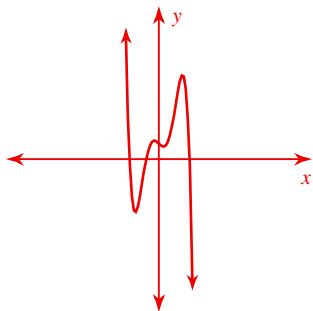
17) $f(x) = x^2 + 2$



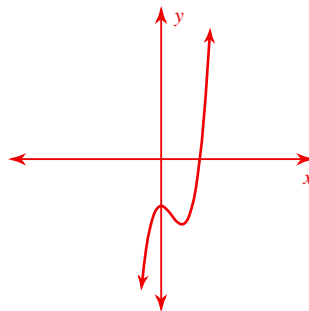
18) $f(x) = -x^4 + 3x^3 - 2 - 5x$



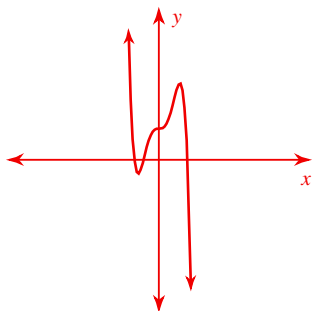
19) $f(x) = -x^5 + 4x^3 - x + 1$



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



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



22) $f(x) = -x^3 + 10x^2 - 33x + 32$

