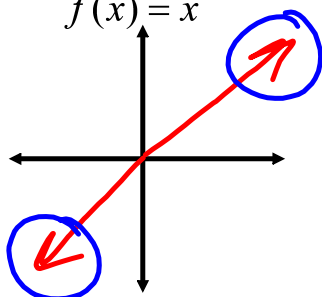


5.2 Evaluate and Graph Polynomial Functions

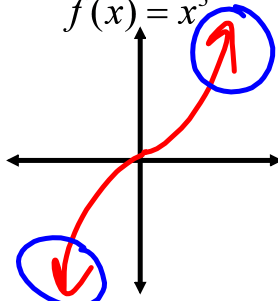
deg: 1 (odd)

$$f(x) = x$$



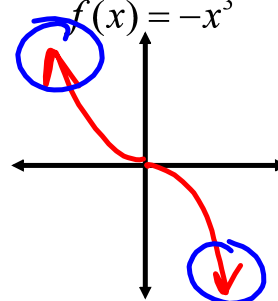
deg: 3 (odd)
End Behavior

$$f(x) = x^3$$



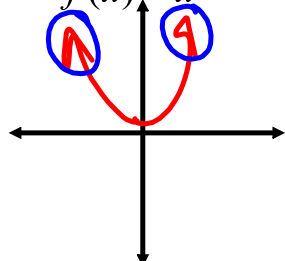
deg: 3 (odd)

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



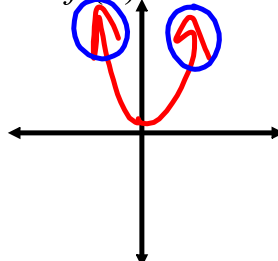
deg: 2 (even)

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



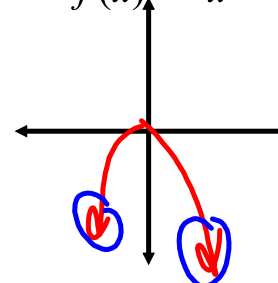
deg: 4 (even)

$$f(x) = x^4$$



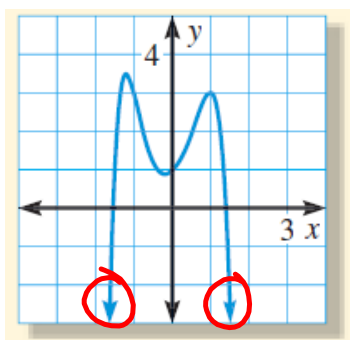
deg: 2 (even)

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

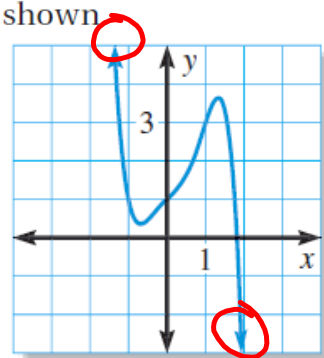


EXAMPLE 4

Describe the degree and leading coefficient of the polynomial function whose graph is shown.



deg: even
l.c.: neg.

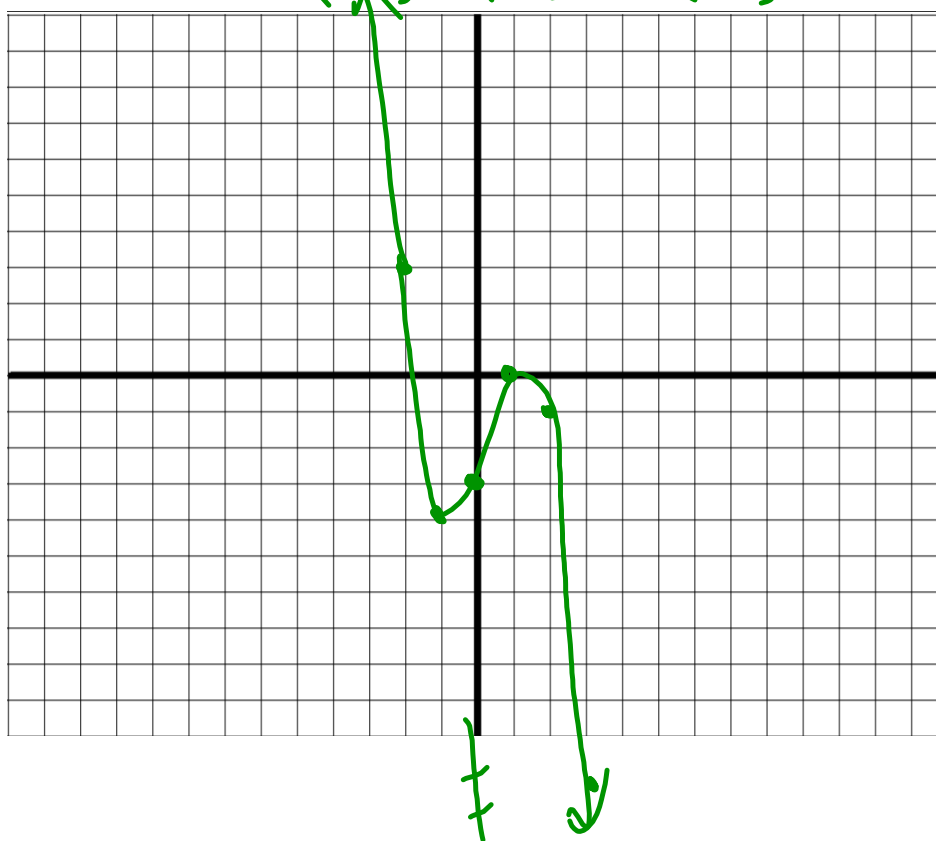


deg: odd
l.c.: neg.

EXAMPLE 5 Graph polynomial functionsGraph $f(x) = -x^3 + x^2 + 3x - 3$

$$-(-3)^3 + (-3)^2 + 3(-3) - 3$$

| x | y |
|----|-----|
| -3 | 24 |
| -2 | 3 |
| -1 | -4 |
| 0 | -3 |
| 1 | 0 |
| 2 | -1 |
| 3 | -12 |
| | |
| | |

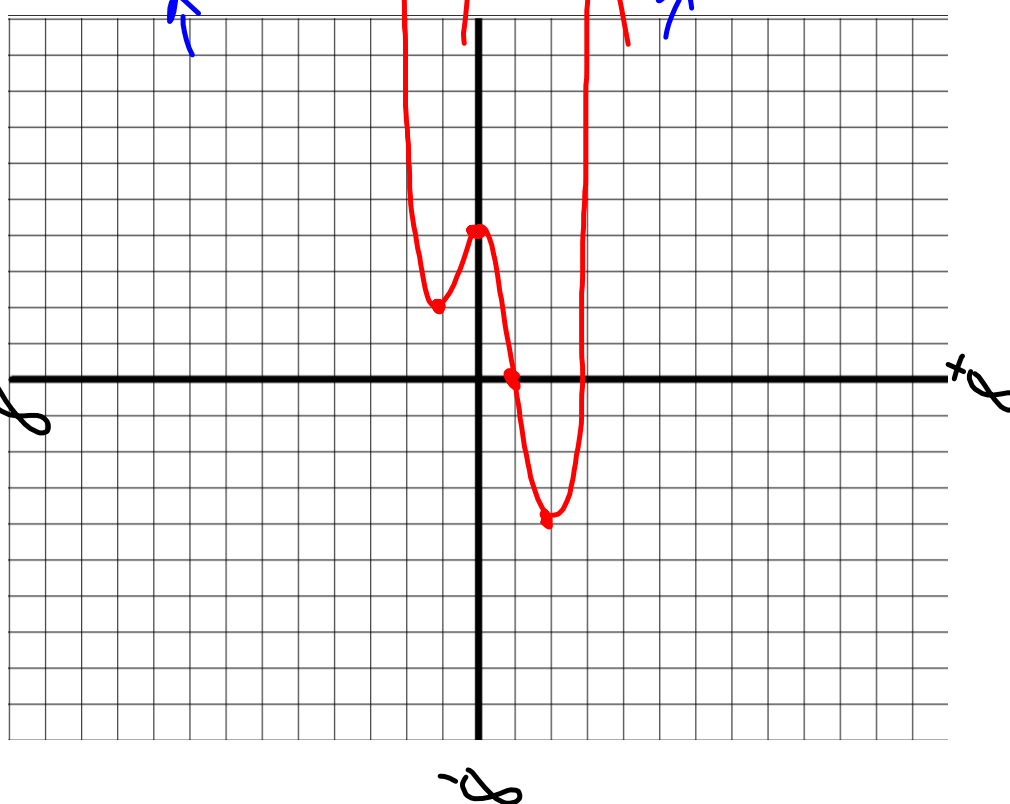


deg: even
l.c.: pos

EXAMPLE 5 Graph polynomial functions

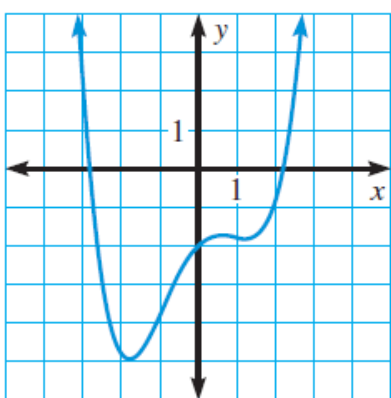
Graph $f(x) = x^4 - x^3 - 4x^2 + 4$.

| x | y |
|----|----|
| -3 | 76 |
| -2 | 12 |
| -1 | 2 |
| 0 | 4 |
| 1 | 0 |
| 2 | -4 |
| 3 | 22 |
| | |
| | |



USING END BEHAVIOR Describe the degree and leading coefficient of the polynomial function whose graph is shown.

25.



deg: even

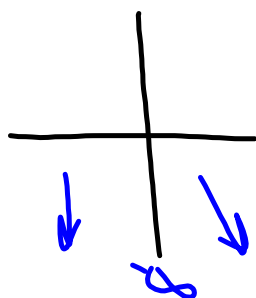
l.c.: pos.

DESCRIBING END BEHAVIOR Describe the end behavior of the graph of the polynomial function by completing these statements: $f(x) \rightarrow \underline{\quad?}$ as $x \rightarrow -\infty$ and $f(x) \rightarrow \underline{\quad?}$ as $x \rightarrow +\infty$.

29. $f(x) = -x^6 + 4x^3 - 3x$

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

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



33. $f(x) = -6x^5 + 14x^2 + 20$

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

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

