Bell Work

Find all the zeros.

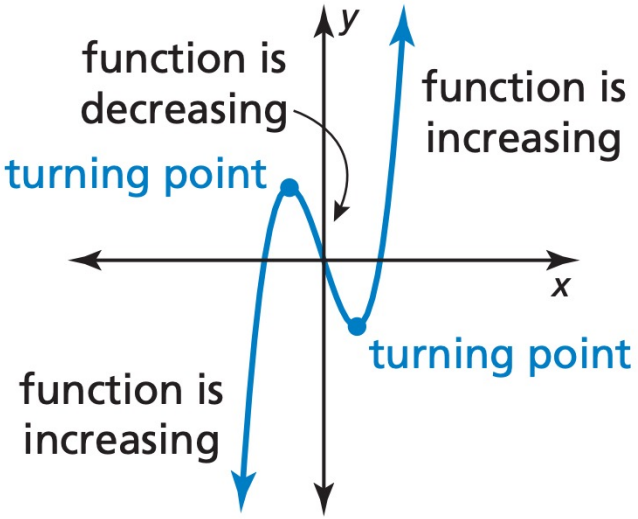
$$f(x) = 7x^3 + 8x^2 - 28x - 32$$

Turning Points

Another important characteristic of graphs of polynomial functions is that they have *turning points* corresponding to local maximum and minimum values.

- The y-coordinate of a turning point is a **local maximum** of the function when the point is higher than all nearby points.
- The y-coordinate of a turning point is a **local minimum** of the function when the point is lower than all nearby points.

A turning point of a graph of a function is a point on the graph at which the function changes from increasing to decreasing, or decreasing to increasing.



Graph each function. Identify the x-intercepts and the points where the local maximums and local minimums occur. Determine the intervals for which each function is increasing or decreasing.

$$f(x) = x^3 - 3x^2 + 6$$

Graph each function. Identify the x-intercepts and the points where the local maximums and local minimums occur. Determine the intervals for which each function is increasing or decreasing.

$$g(x) = x^4 - 6x^3 + 3x^2 + 10x - 3$$

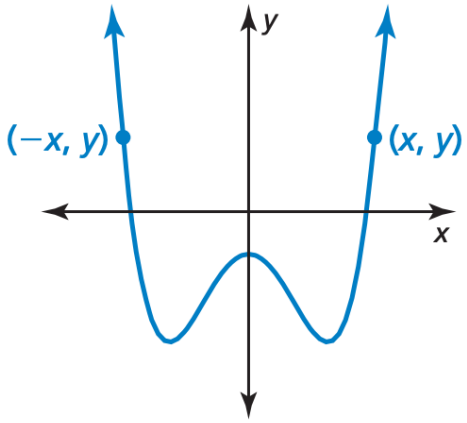
KEY IDEA

Even and Odd Functions

A function f is an **even function** when $f(-x) = f(x)$ for all x in its domain. The graph of an even function is *symmetric about the y-axis*.

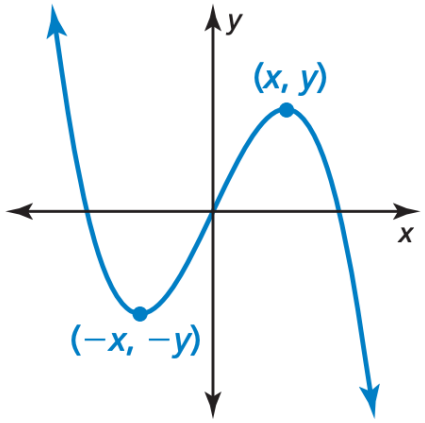
A function f is an **odd function** when $f(-x) = -f(x)$ for all x in its domain. The graph of an odd function is *symmetric about the origin*. One way to recognize a graph as symmetric about the origin is that it looks the same after a 180° rotation about the origin.

Even Function



For an even function, if (x, y) is on the graph, then $(-x, y)$ is also on the graph.

Odd Function



For an odd function, if (x, y) is on the graph, then $(-x, -y)$ is also on the graph.

Determine whether each function is even, odd, or neither.

$$f(x) = x^3 - 7x$$

Determine whether each function is even, odd, or neither.

$$g(x) = x^4 + x^2 - 1$$

Determine whether each function is even, odd, or neither.

$$h(x) = x^3 + 2$$