

Algebra 13-6 Polynomial Functions

On your graphing calculator set the window to

$$X_{\min} = -5, X_{\max} = 5, X_{\text{scl}} = 1$$

$$Y_{\min} = -5, Y_{\max} = 5, Y_{\text{scl}} = 1$$

1. Graph $y = x^3$, $y = x^3 + 1$, $y = x^3 + 3$, and $y = x^3 - 2$ all on the same graph.
What do you notice happening?

2. Clear out all of the functions.
Graph $y = x^3$, $y = x^3 + 2x$, $y = x^3 + 3x$, and $y = x^3 + 4x$, all on the same graph.
What do you notice happens when you simply add x ?

3. Clear out all of the functions.
Graph $y = x^3$, $y = x^3 - 2x$, $y = x^3 - 3x$, and $y = x^3 - 4x$, all on the same graph.
Notice how things change quite a bit when you subtract x .

4. Clear out all of the functions.
Graph $y = x^2$, $y = x^4$, $y = x^6$, and $y = x^8$, all on the same graph.
Why do you think the graphs do not change that much?
Hint: Remember $2^4 = (2^2)^2$

5. Clear out all of the functions.
Graph $y = -x^3$, $y = -x^5$, $y = -x^7$, and $y = -x^9$ all on the same graph.
How are these graphs different than the graph $y = x^3$?