

HW 3.1

p. 128

2 – 14 even

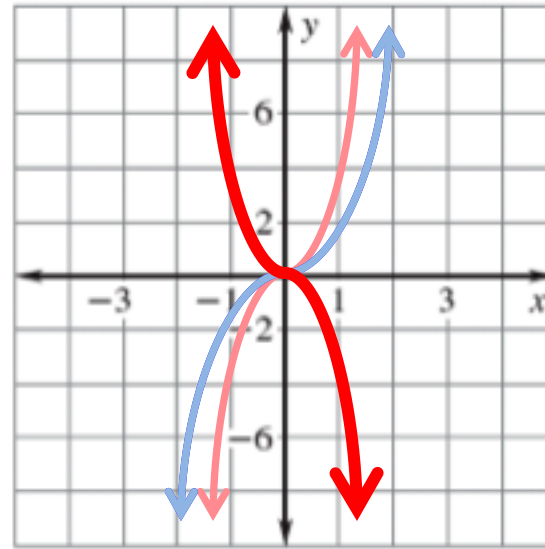


2. $f(x) = -3x^3$

Graph $y = -3x^3$ Compare the graph with the graph of $y = x^3$

First make a table of values.

x	y
-2	24
-1	3
0	0
1	-3
2	-24



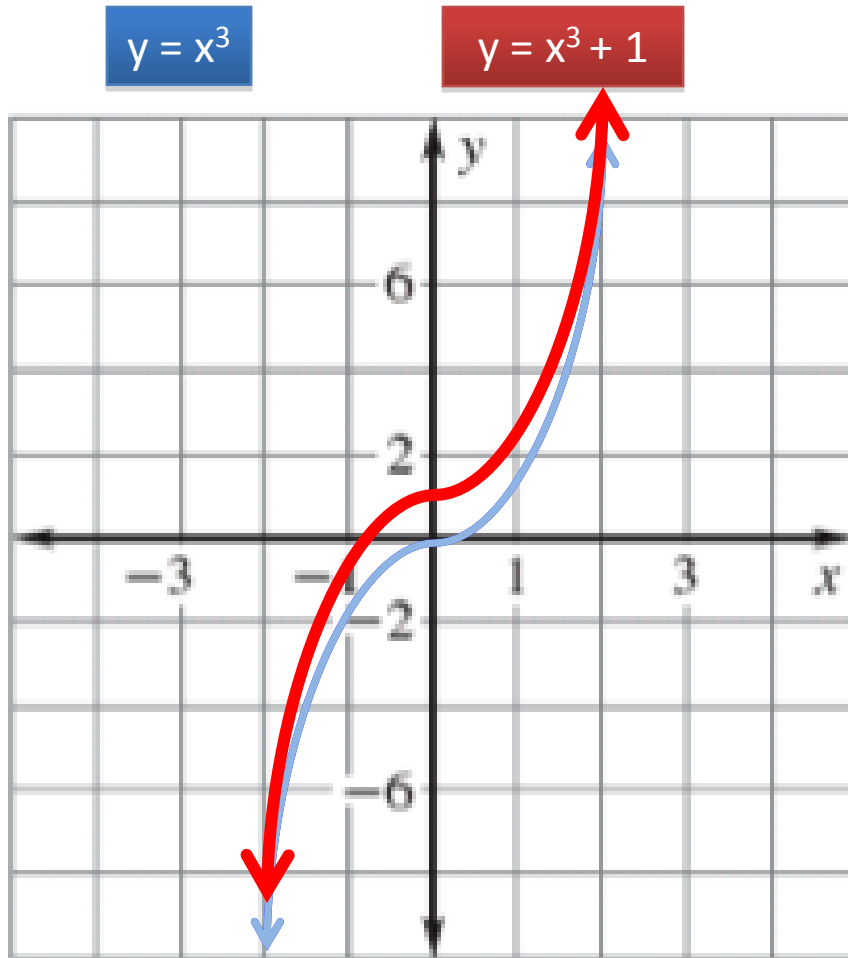
Draw the graph. The graph of $y = -3x^3$ should be stretched by a factor of three and reflected.

Describe the end behavior: As x goes to $+\infty$, y goes down. As x goes to $-\infty$, y goes up.



Graph the function. *Compare* the graph with the graph of $y = x^3$.

4. $y = x^3 + 1$



ADDING OR SUBTRACTING A CONSTANT CAUSES A VERTICAL SHIFT. SINCE THE CONSTANT IS **ADDED**, THE GRAPH SHIFTS **UP**.

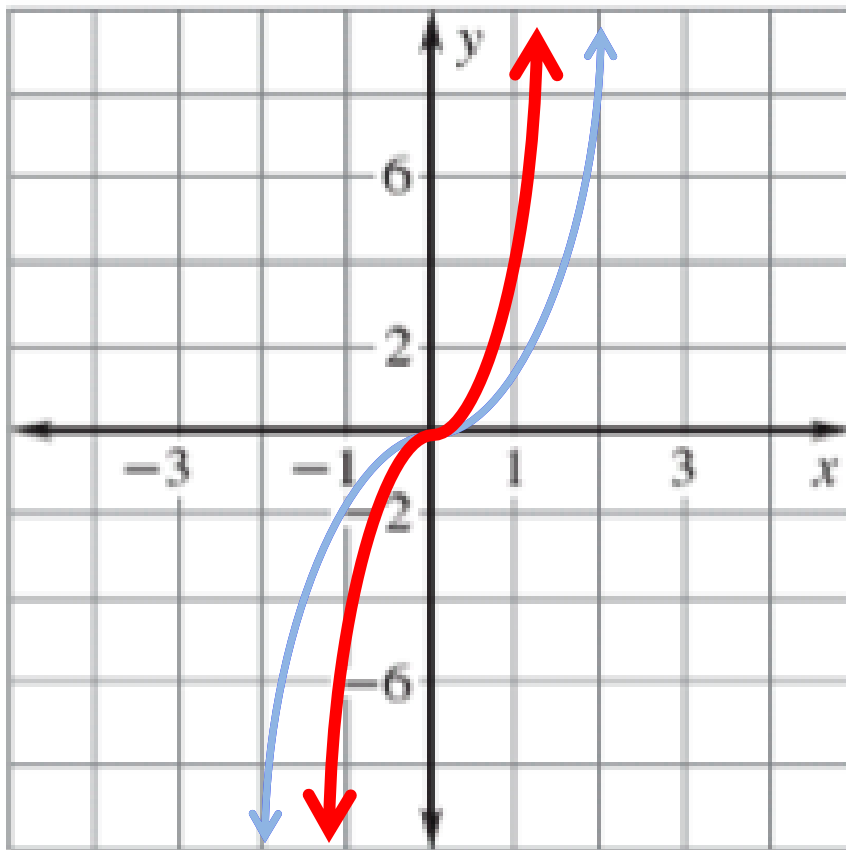
THE GRAPH IS A VERTICAL TRANSLATION OF ONE UNIT UP. THE WHOLE GRAPH MOVES UP ONE UNIT.

Graph the function. Compare the graph with the graph of $y = x^3$.

6. $y = 4x^3$

$y = x^3$

$y = 4x^3$



INCREASING THE COEFFICIENT OF x^3 CAUSES A **VERTICAL STRETCH**, MAKING THE GRAPH **SKINNY**.

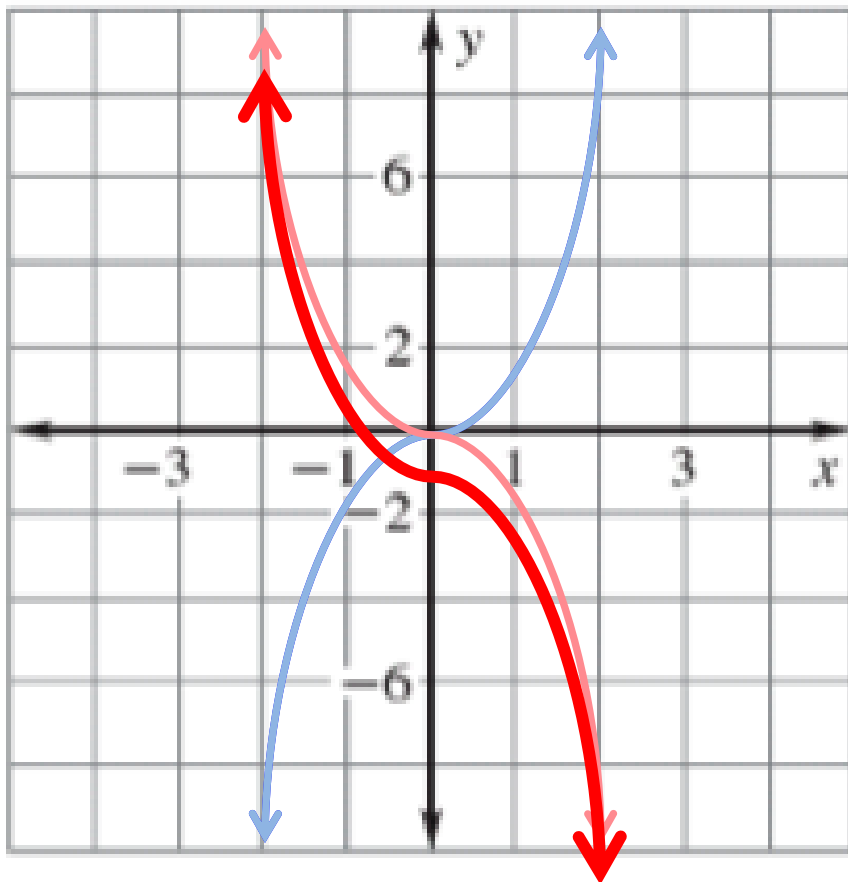
THE GRAPH IS A VERTICAL STRETCH BY A FACTOR OF 4. THE WHOLE GRAPH GETS THINNER.

Graph the function. *Compare* the graph with the graph of $y = x^3$.

8. $y = -x^3 - 1$

$y = x^3$

$y = -x^3 - 1$



A NEGATIVE COEFFICIENT OF x^3 CAUSES A **REFLECTION**, MAKING THE GRAPH **FLIP**.

ADDING OR SUBTRACTING A CONSTANT CAUSES A VERTICAL SHIFT. SINCE THE CONSTANT IS **SUBTRACTED**, THE GRAPH SHIFTS **DOWN**.

THE GRAPH IS REFLECTED AND SHIFTED DOWN ONE UNIT.

Tell whether the function is *even*, *odd*, or *neither*.

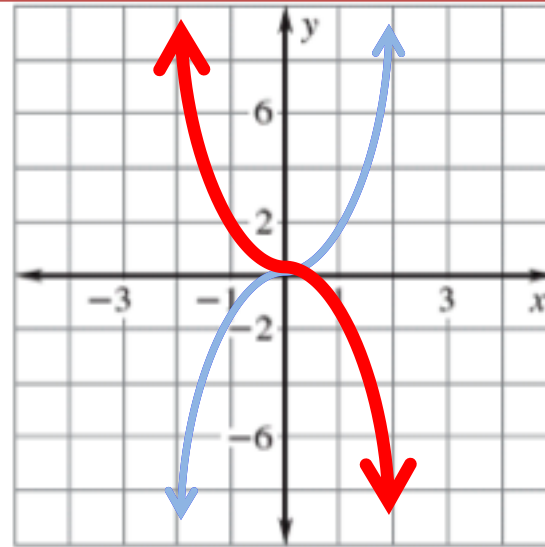
10. $f(x) = -x^3$

First make a table of values.

x	y
-2	8
-1	1
0	0
1	-1
2	-8

Opposite inputs give opposite outputs.

The graph has rotational symmetry about the origin.



Draw the graph. The graph of $y = -x^3$ should be a reflection of $y = x^3$.

Is the graph even or odd?

the graph is **Odd**



Tell whether the function is *even*, *odd*, or *neither*.

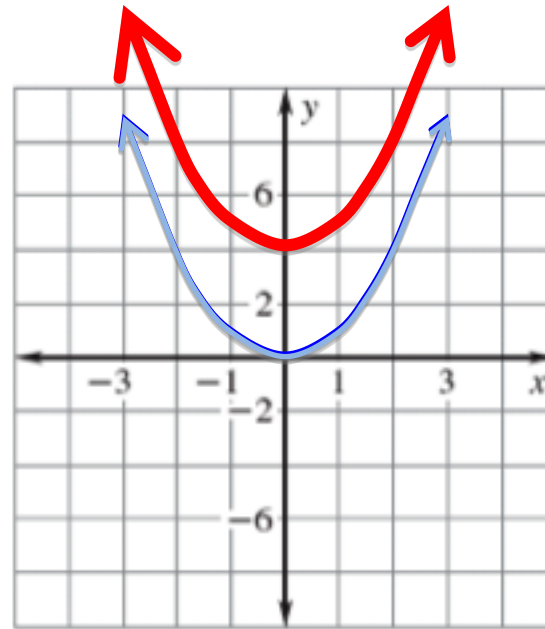
12. $f(x) = x^2 + 4$

First make a table of values.

x	y
-2	8
-1	5
0	4
1	5
2	8

Opposite inputs give the same outputs.

The graph has reflective symmetry about the y-axis.



Draw the graph. The graph of $y = x^2 + 4$ is a vertical shift of 4 units from $y = x^2$.

Is the graph even or odd?

the graph is **Even**



Tell whether the function is *even*, *odd*, or *neither*.

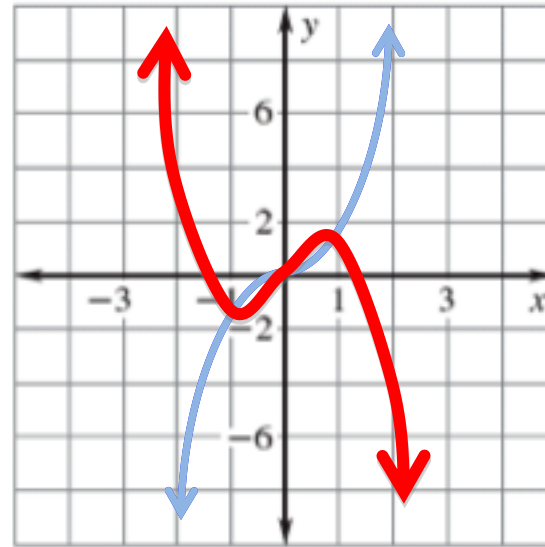
14. $f(x) = -x^3 + 2x$

First make a table of values.

x	y
-2	4
-1	-1
0	0
1	1
2	-4

Opposite inputs give opposite outputs.

The graph has rotational symmetry about the origin.



Draw the graph. Plot the points to draw the graph.

Is the graph even or odd?

the graph is **Odd**

[online grapher](#)

