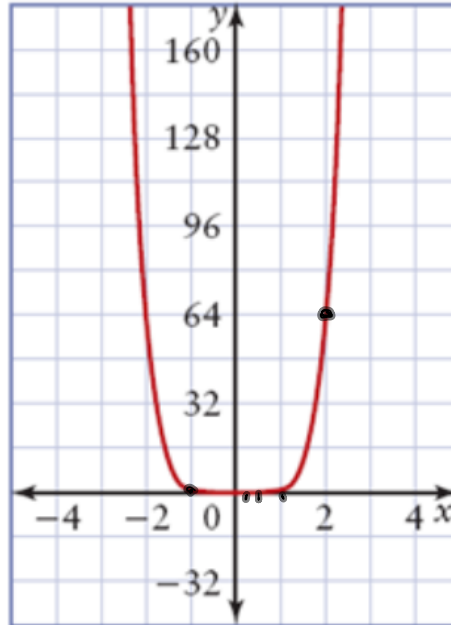


Which function is shown in the graph?

~~$y = x^2$~~
 ~~$y = x^3$~~
 ~~$y = x^4$~~
 ~~$y = x^5$~~
 $y = x^6$

$y = 2^2 = 4$
 $y = 2^6 = 64$



Graph each function below using a graphing calculator. Make a sketch of each in your notes.

$$y = x$$

State the end-behaviour of each function

$$y = x^2$$

Identify any symmetry.

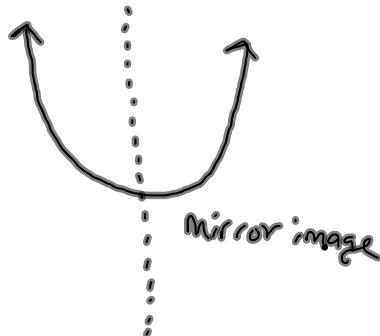
$$y = x^3$$

$$y = x^4$$

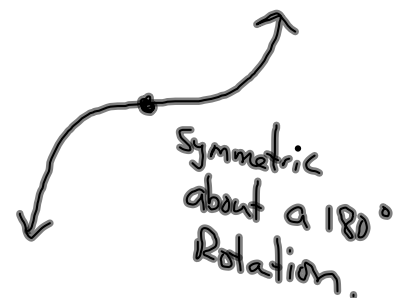
$$y = x^5$$

$$y = x^6$$

Line Symmetry



Point Symmetry



Degree of a polynomial

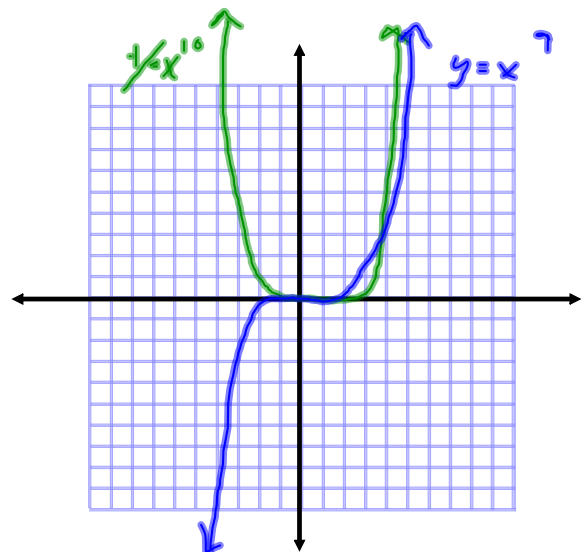
Is the value of the exponent on the highest power of x

How does the degree affect the graph of the polynomial?

FOR Even degree polynomials: The end behaviour is the same: as $x \rightarrow \infty, y \rightarrow \infty$
 $x \rightarrow -\infty, y \rightarrow \infty$
 They all have line symmetry.

FOR odd degree polynomials:
 end behaviour is as $x \rightarrow \infty, y \rightarrow \infty$
 $x \rightarrow -\infty, y \rightarrow -\infty$
 They all have point symmetry

Sketch a prediction of the graph of $y = x^{10}$, $y = x^9$



Graph each function below using a graphing calculator. Make a sketch of each in your notes.

$$y = 2x^3$$

$$y = -2x^3$$

$$f(x) = 8x^6$$

$$g(x) = -8x^6$$

$$h(x) = -x^5$$

$$j(x) = 15x^{10}$$

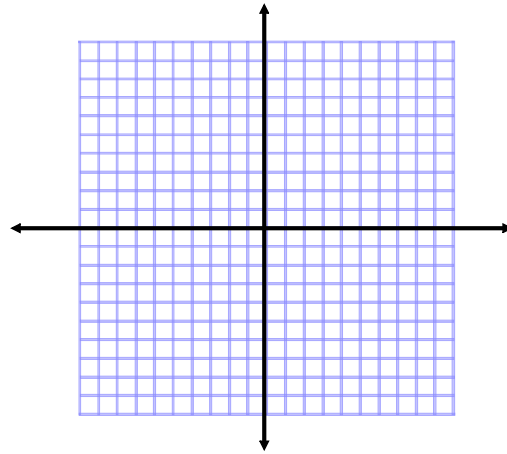
State the end-behaviour of each function

Identify any symmetry.

How does the leading coefficient of the function affect the graph of the polynomial?

- It stretches or compresses the graph
- It will reflect a power function in the x-axis

Sketch a prediction of each graph $y = -x^{12}$, $y = x^7$



$$x = -6$$

$$y = -\frac{2}{5}x \quad y = \sqrt{x}$$

$$y = x^3 + 2x^2 - x + 11$$

$$y = -0.2(4x - 3)(x + 3)$$

$$y = x^2$$

$$y = (x - 2)^2 + 1$$

$$y = \sin \beta$$

$$h(x) = \sqrt[3]{x}$$

$$x^2 + y^2 = 16$$

For each function

- i) state the domain and range
- ii) describe the end behaviour
- iii) identify any symmetry

