Definition of Power Functions

Name _____

Date _____ Period _____

A power function is a function in the form...

$$f(x) = ax^n$$

where a is a real numbers, $a \neq 0$, and n is a nonnegative integer.

$f(x) = 5x$ $f(x) = -3x^2$ $f(x) = x^3$ $f(x) = 2x^4$

the value of a causes a vertical stretch or compression
if $a < 0$, a causes a reflection over x-axis

A power function is a function in the form...

$$f(x) = x^n$$

where a is a real numbers, $a \neq 0$, and n is a nonnegative integer.

$f(x) = x$ $f(x) = x^2$ $f(x) = x^3$ $f(x) = x^4$

A power function of Even Degree

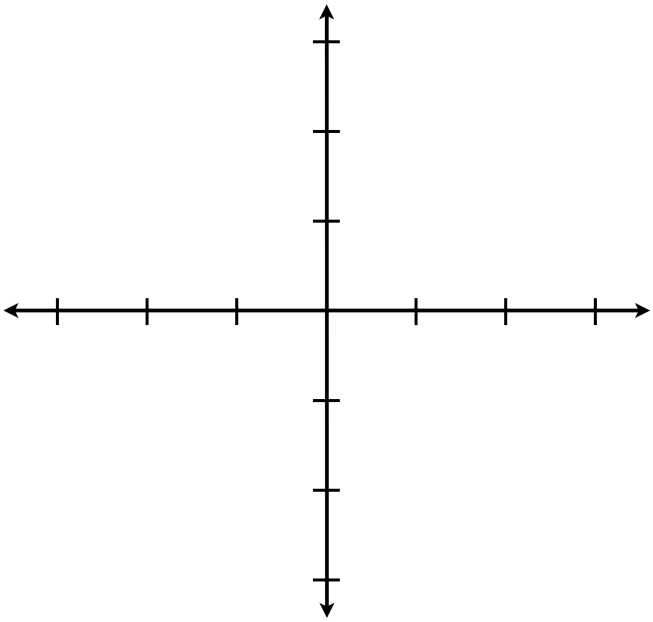
$$f(x) = x^n$$

n is an even integer.

$f(x) = x^2$

$g(x) = x^4$

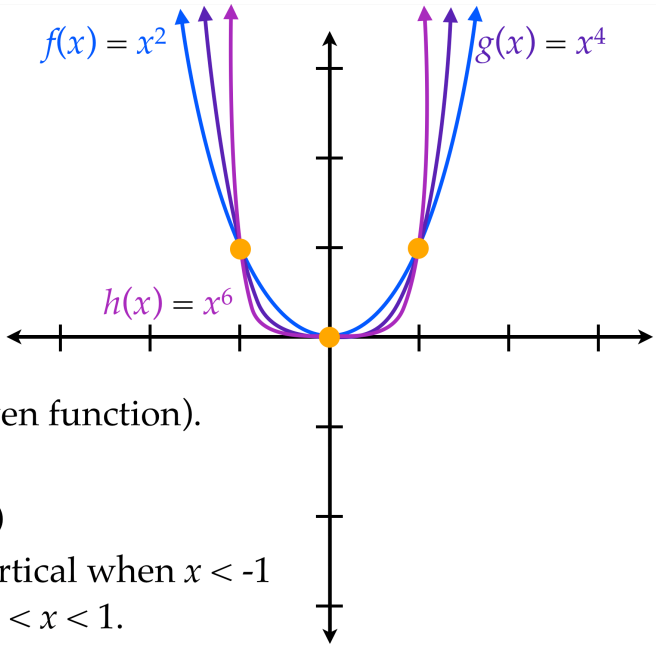
$h(x) = x^6$



A power function of Even Degree

$$f(x) = x^n$$

n is an even integer.



1. Graph symmetric with respect to y-axis (even function).
2. Domain: $(-\infty,\infty)$ Range: $[0,\infty)$
3. Graph contains points (-1,1), (0,0), and (1,1)
4. As n increases, the graph becomes more vertical when $x < -1$ and $x > 1$; and flattens more at x-axis when $-1 < x < 1$.

A power function of Odd Degree

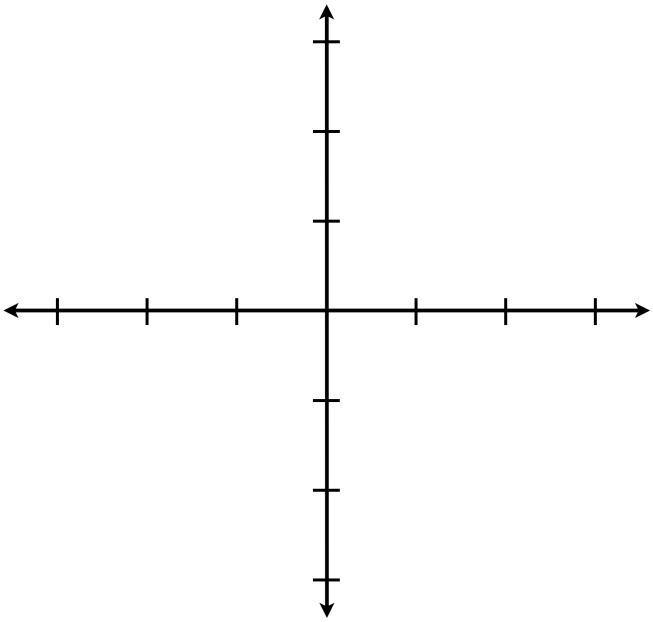
$$f(x) = x^n$$

n is an odd integer.

$f(x) = x$

$g(x) = x^3$

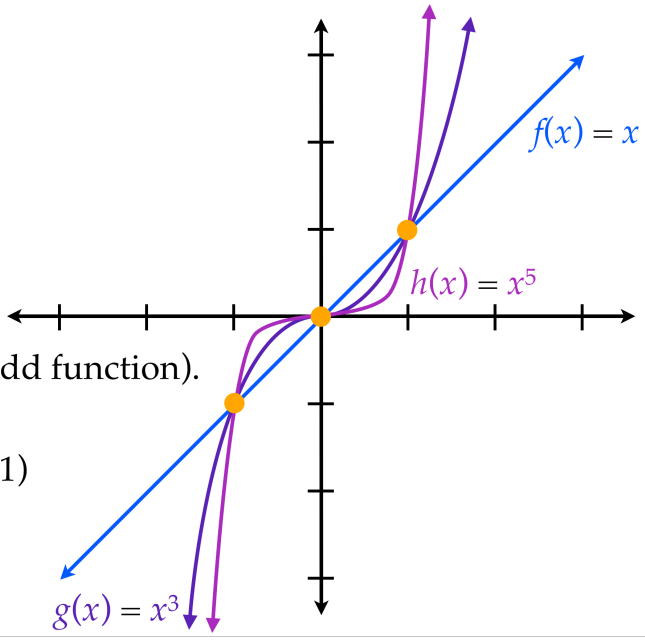
$h(x) = x^5$



A power function of Odd Degree

$$f(x) = x^n$$

n is an odd integer.

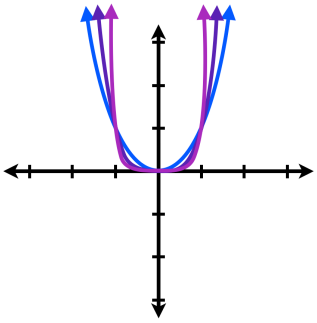


1. Graph symmetric with respect to origin (odd function).
2. Domain: $(-\infty,\infty)$ Range: $(-\infty,\infty)$
3. Graph contains points (-1,-1), (0,0), and (1,1)
4. As n increases, the graph becomes more vertical when $x < -1$ and $x > 1$; and flattens more at x-axis when $-1 < x < 1$.

A power function of Even Degree

$$f(x) = x^n$$

n is an even integer.



A power function of Odd Degree

$$f(x) = x^n$$

n is an odd integer.