How are you feeling today?

Students, write your response!

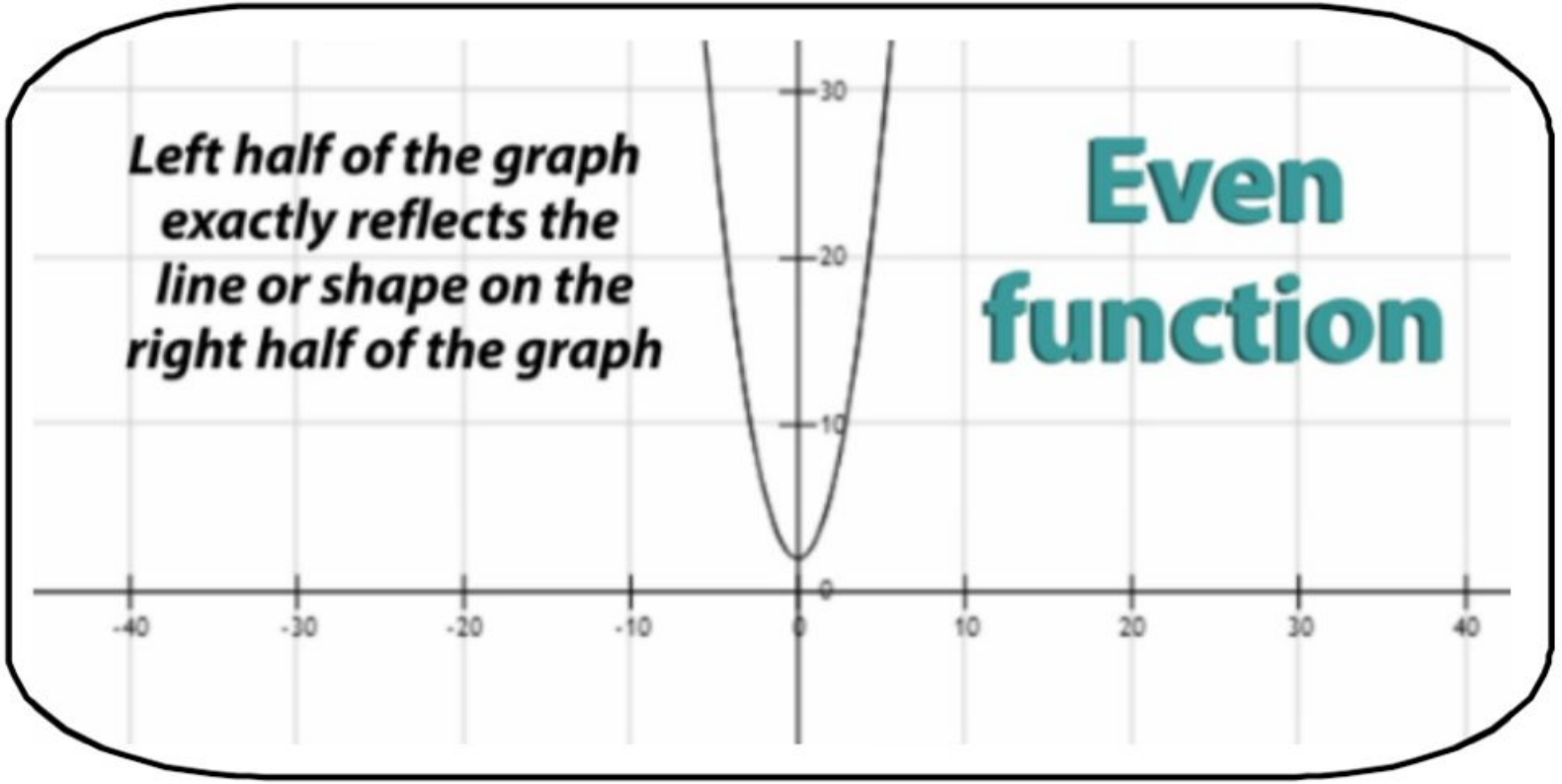
Even and Odd functions (algebraically)

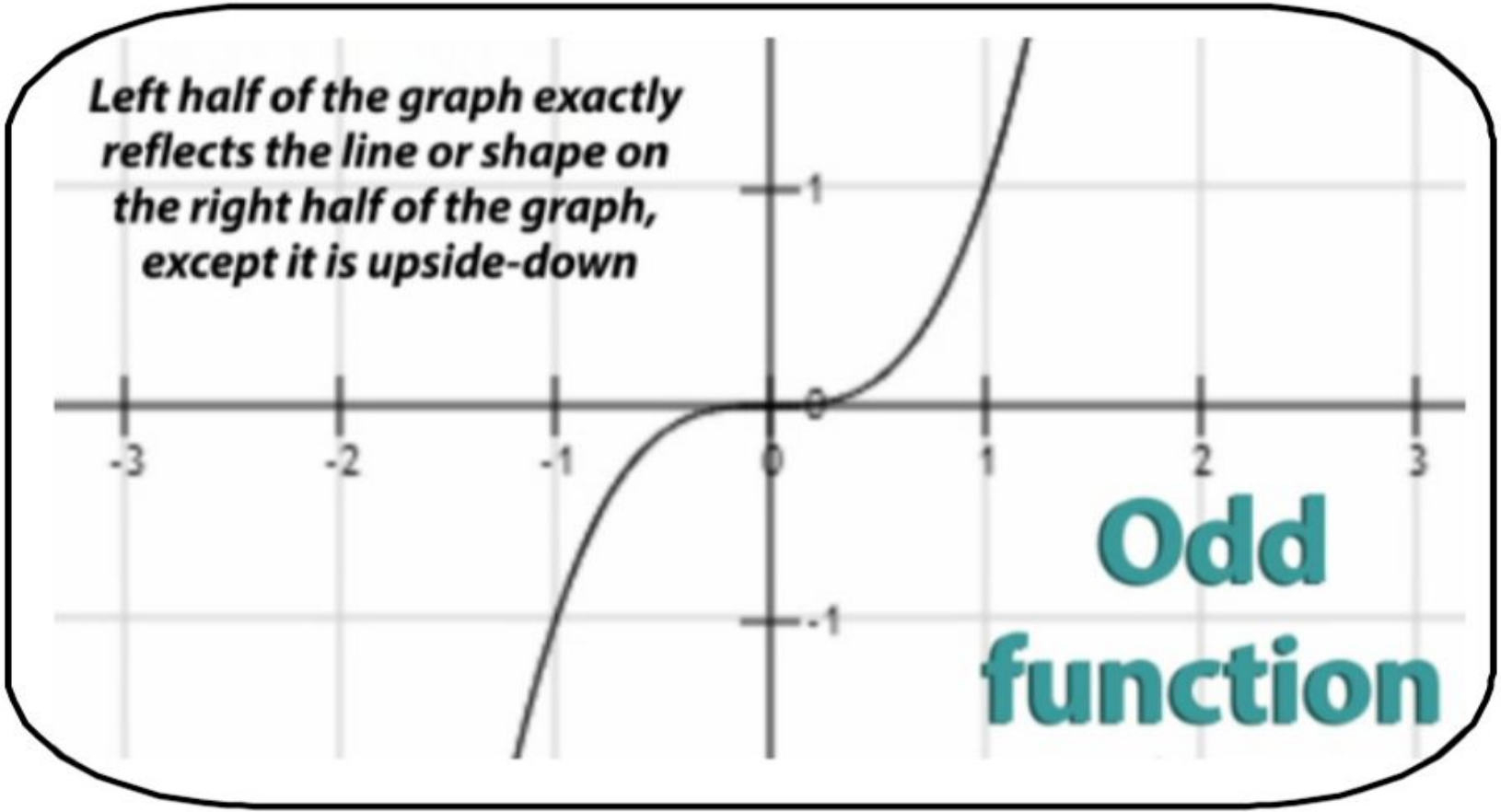
A function is even if $f(-x) = f(x)$
If you plug in -x and get the original function, then it's even.

A function is odd if $f(-x) = -f(x)$
If you plug in -x and get the opposite function, then it's odd.

Trigonometric Functions

Even Functions $f(-x) = f(x)$	Odd Functions $f(-x) = -f(x)$
$\cos(-x) = \cos x$ $\sec(-x) = \sec x$	$\sin(-x) = -\sin x$ $\csc(-x) = -\csc x$ $\tan(-x) = -\tan x$ $\cot(-x) = -\cot x$





Students, draw anywhere on this slide!

Determine algebraically if the given function is odd or even.

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

Students, draw anywhere on this slide!

Determine algebraically if the given function is odd or even.

2) $r(x) = x^5 - 3x^3 + 7$

Students, draw anywhere on this slide!

Determine algebraically if the given function is odd or even.

3) $g(x) = x^5 - 4x^3$

Students, draw anywhere on this slide!

Determine graphically if the given function is odd or even.

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

Students, draw anywhere on this slide!

Determine graphically if the given function is odd or even.

5) $f(x) = \sin x$

6) $f(x) = \cos x$

7) $f(x) = |x - 5| + 5$

8) $f(x) = (x + 1)^3$

9) $f(x) = e^{5x}$

Students, draw anywhere on this slide!

Determine algebraically if the given function is odd or even.

1. $f(x) = x^2 - 1$

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

3. $f(x) = x^2 - 2x - 1$

4. $f(x)\ 1 + (1/x^2)$

Students, draw anywhere on this slide!

Summary

even functions and odd functions are functions which satisfy particular symmetry relations, with respect to taking additive inverses. They are important in many areas of mathematical analysis, especially the theory of power series and Fourier series. They are named for the parity of the powers of the power functions which satisfy each condition: the function $f(x) = x^n$ is an even function if n is an even integer, and it is an odd function if n is an odd integer.