

Even & Odd functions:

Tuesday, September 9, 2025 3:00 PM

Even & Odd functions:

The even function: the function $f: X \rightarrow Y$ is said to be even if $f(-x) = f(x)$, for all $-x, x \in X$.
The curve of the even function is symmetric about y-axis.

The odd function: the function $f: X \rightarrow Y$ is said to be odd if $f(-x) = -f(x)$ for all $-x, x \in X$.
The curve of the odd function is symmetric about the origin point.

$$f(x) = \sqrt{x+3}$$

$$f(-x) = \sqrt{-x+3} = \sqrt{3-x}$$

neither nor

Screen clipping taken: 9/15/2025 10:27 PM



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

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

$$f(-x) = -f(x)$$

odd fun.

Show the type for each of the following functions (even - odd).

a $f(x) = x^2$

b $f(x) = x^3$

c $f(x) = \sqrt{x+3}$

d $f(x) = \cos x$

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

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

$$\therefore f(-x) = f(x) \text{ even fun.}$$

Neither even nor odd

odd \forall , even \forall

Determine the type for each of the following functions whether even, odd or otherwise.

a $f(x) = \sin x$

b $f(x) = x^2 + \cos x$

c $f(x) = x^3 - \sin x$

d $f(x) = x^2 \cos x$

e $f(x) = x^3 \sin x$

f $f(x) = x^3 \cos x$

g $f(x) = x^3 + x^2$

h $f(x) = \sin x + \cos x$

i $f(x) = \sin x \cos x$

Remember that

$$\sin(-x) = -\sin x$$

$$\cos(-x) = \cos x$$

$$\tan(-x) = -\tan x$$

$$f(x) = x^3 \sin x$$

$$f(-x) = (-x)^3 \sin(-x)$$

$$= -x^3 \sin x$$

$$= -x^3 \sin x = -f(x)$$

$$\therefore f(-x) = -f(x)$$

$\therefore f(x)$ is odd fun.

$$f(x) = \sin x + \cos x$$

$$f(-x) = \sin(-x) + \cos(-x)$$

$$= -\sin x + \cos x$$

$$\neq f(x)$$

$$f(-x) \neq f(x)$$

neither even nor odd.



A series of horizontal blue lines for writing, with a vertical red margin line on the left side.