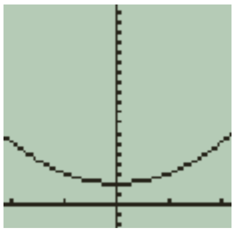
A104PC

If $f(x) = f(-x)$ for all values of x, then the function is an <u>Even Function</u>

Example: $f(x) = x^2 + 2$ is and Even Function because
$f(2) = 6$ and $f(-2) = 6$, $f(5) = 27$ and $f(-5) = 27$
When you use opposite domain values, you get the same outcome.

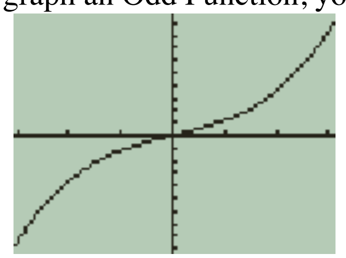
If you graph an Even Function, you will see that it is symmetric about the y-axis



If $f(x) = -f(-x)$ for all values of x, then the function is an Odd Function

Example: $f(x) = x^3 + x$ is an Odd Function because
$f(2) = 10$ and $f(-2) = -10$, $f(1) = 2$ and $f(-1) = -3$
When you use opposite domain values, you get opposite outcomes.

If you graph an Odd Function, you will see that it is symmetric about the origin.



Assignment 104

01.03 Graphs of Functions
Page 38, #'s 60, 61, 62, 64, 70, 93, 94, 103, 112, 120

Exer. 59-66: Algebraically determine whether the function is even, odd, or neither. Verify your answer using a graphing utility.

60. $f(x) = x^6 - 2x^2 + 3$

61. $g(x) = x^3 - 5x$

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

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

Exer. 67-72: Find the coordinates of a second point on the graph of a function f if the given point is on the graph and the function is (a) even and (b) odd.

70. (5, -1) (a) (b)

Exer. 93-94: Determine whether the statement is true or false. Justify your answer.

93. A function with a square root cannot have a domain that is the set of all real numbers.

94. It is possible for an odd function to have the interval $(0, \infty)$ as its domain.

103. If f is an even function, determine if g is even, odd, or neither. Explain.

a. $g(x) = -f(x)$
b. $g(x) = f(-x)$
c. $g(x) = f(x) - 2$
d. $g(x) = -f(x - 2)$

Exer. 111-114: Find
(a) the distance between the two points and
(b) the midpoint of the line segment joining the points.

112. (-5, 0), (3, 6)
(a)
(b)

Exer. 119-120: Find the difference quotient and simplify your answer.

120. $f(x) = 5 + 6x - x^2, \frac{f(6 + h) - f(6)}{h} \quad h \neq 0$