

2/7/2017

Symmetry — along the y-axis (even function)
 $f(-x) = f(x)$
— along the origin (odd function)

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

#50 $g(x) = \frac{3}{1+x^2}$

even $f(-x) = f(x)$
 $g(-x) = g(x)$

$$\frac{3}{1+(-x)^2} = \frac{3}{1+x^2} \quad \text{even } f(x)$$

odd $g(-x) = -g(x)$

$$\frac{3}{1+(-x)^2} = \frac{3}{1+x^2} \quad \text{not an odd}$$

$$\frac{-3}{1+x^2}$$
$$\frac{3}{x^2-1}$$

#52 $f(x) = x^3 + 0.04x^2 + 3$

$$f(-x) = (-x)^3 + 0.04(-x)^2 + 3$$
$$= -x^3 + 0.04x^2 + 3$$

neither

Domain: is always all real numbers
except!!! 1. when a variable is
 in the denominator

~~3/8~~ \sqrt{x}
 $\sqrt[4]{x}$

2. when a variable is
 in a radical with
 even index

#10. $h(x) = \frac{5}{x-3} \rightarrow \begin{matrix} x-3 \neq 0 \\ x \neq 3 \end{matrix}$

$D: (-\infty, 3) \cup (3, \infty)$

$f(x) = x^2 + 2x \quad D: (-\infty, \infty)$

#14 $h(x) = \sqrt{4-x^2}$

$x-3 \neq 0$

$\sqrt{4-x^2}$

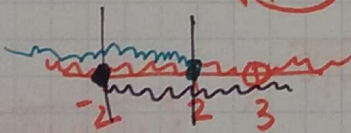
$4-x^2 \geq 0$

$x \neq 3$

$4 \geq x^2$
 $\sqrt{x^2} \leq \sqrt{4}$
 $D: [-2, 2]$

~~$x \leq 2 \cup x \geq -2$~~

$x \leq 2 \quad x \geq -2 \quad x \neq 3$



#16

$x^4 - 16x^2 \geq 0$
 $x^2(x^2 - 16) \geq 0$
 $x^2 \geq 0 \quad x^2 \geq 16$
 $x = 0 \quad x \geq 4 \quad x \leq -4$

2/7/2017

Symmetry

along the y-axis (even function)

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

along the origin (odd function)

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

#50 $g(x) = \frac{3}{1+x^2}$

$$g(-x) = \frac{3}{1+(-x)^2} = \frac{3}{1+x^2}$$

$$-g(x) = -\left(\frac{3}{1+x^2}\right)$$

$$= \frac{-3}{1+x^2}$$
$$= \frac{3}{-x^2-1}$$

~~$-f(x) = -x^3 - 0.04x^2 - 3$~~ ^{even}

#52 $f(x) = x^3 + 0.04x^2 + 3$

$$f(-x) = (-x)^3 + 0.04(-x)^2 + 3$$

$$= -x^3 + 0.04x^2 + 3$$
 neither

Domain: is always all real numbers except!!!

2 1.) when there is a variable in the denominator

$$\frac{x+2}{x^2-4} \quad ???$$

$$x^2-4 \neq 0$$

$$\sqrt{x^2} \neq \sqrt{4}$$

$$x \neq 2 \text{ and } -2$$

$$(-\infty, -2) \cup (-2, 2) \cup (2, \infty)$$

2.) you have a radical with an even index

$$\sqrt{x} \quad \sqrt{x+2} \quad \sqrt{x+2}$$

$$x+2 \geq 0$$

$$x \geq -2$$

$$[-2, \infty)$$

#10 $h(x) = \frac{5}{x-3}$ $x-3 \neq 0$
 $x \neq 3$
 $D: (-\infty, 3) \cup (3, \infty)$

#14 $h(x) = \frac{\sqrt{4-x^2}}{x-3}$ $x-3 \neq 0$ $4-x^2 \geq 0$ $x \leq 2$
 $x \neq 3$ $-x^2 \geq -4$ $x \geq -2$
 $x^2 \leq 4$
 $D: [-2, 2]$



12. $f(x) = \frac{1}{x} + \frac{5}{x-3}$

$D: (-\infty, 0) \cup (0, 3) \cup (3, \infty)$