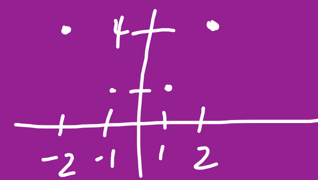
ANALYZING GRAPHS

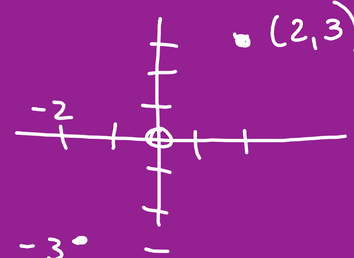
Even Functions – symmetric to y-axis

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



Odd Functions – origin symmetry

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



$f(x) = 2x^4 - 3x^2 + 7$

$f(-x) = 2(-x)^4 - 3(-x)^2 + 7$

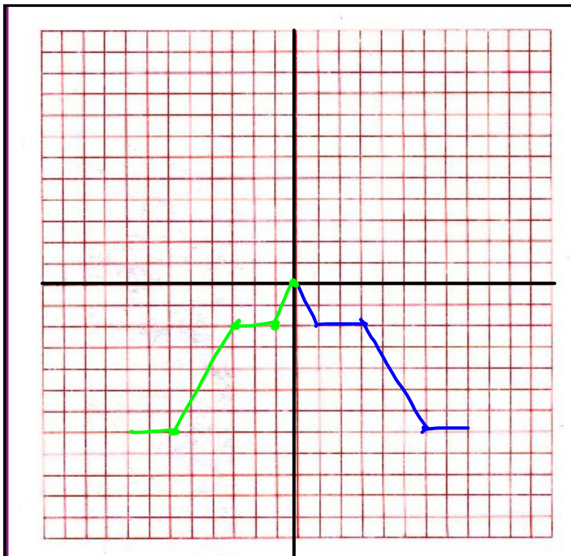
$= 2x^4 - 3x^2 + 7$ EVEN

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

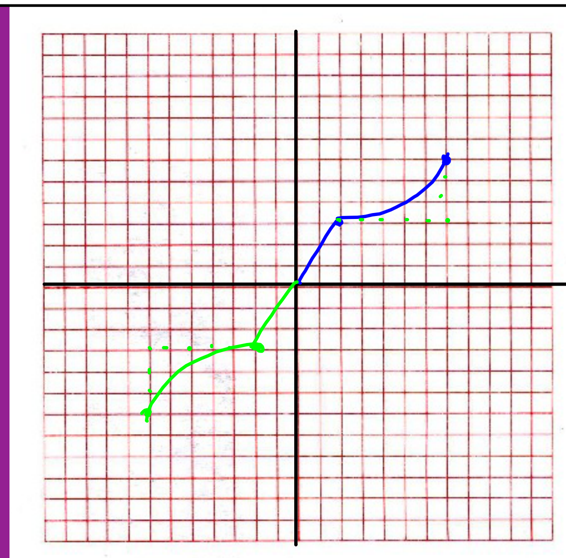
$f(-x) = (-x)^3 - (-x)$

$= -x^3 + x$ Even- No

$= -(x^3 - x)$ $\boxed{\text{Odd Func.}}$



EVEN - y-axis Symm.



ODD - Origin Symm.

$$f(x) = \frac{x^2+1}{x}$$

$$\boxed{\text{Odd}}$$

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

$$\frac{-1}{2} \quad \frac{1}{-2} \quad -\frac{1}{2}$$

$$f(x) = x^3 - 8$$

$$f(-x) = (-x)^3 - 8$$

$$= -x^3 - 8$$ Not Even

$$= -(x^3+8)$$ Not Odd

$$\boxed{\text{Neither}}$$

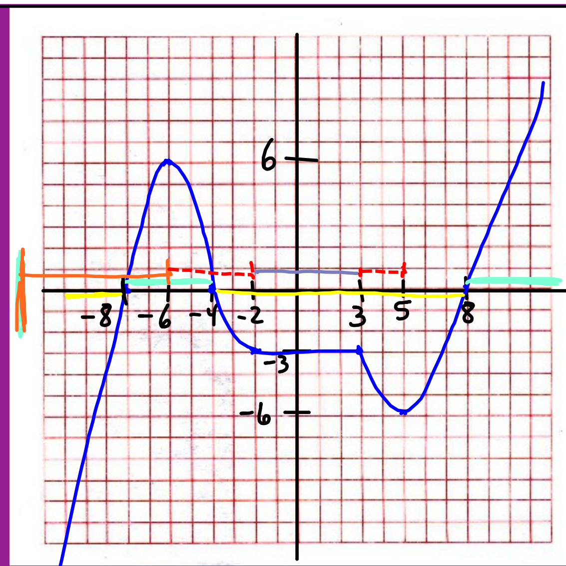
1) Domain: L to R $(-\infty, \infty)$
Range: Low to High $(-\infty, \infty)$

2) Zeros: $-8, -4, 8$
(x-int)

3) Intervals where: Use x-coords!
$f(x) > 0$: (+) above x-axis
$y > 0$
$(-8,-4) \cup (8, \infty)$

$f(x) < 0$ (-) below x-axis
$y < 0$ $(-\infty,-8) \cup (-4, 8)$

4) Increasing: (rising L to R) $(-\infty,-6)$ $(5,\infty)$
Decreasing: (falling L to R) $(-6,-2)$ $(3,5)$
Constant: $(-2, 3)$



5) End Behavior:
Left: $-\infty$ (Down)
Right: $+\infty$ (up)

6) Local max/min. = Relative max/min
(Any peak or valley)

Coord Rel max: $(-6,6)$
Rel min: $(5,-6)$