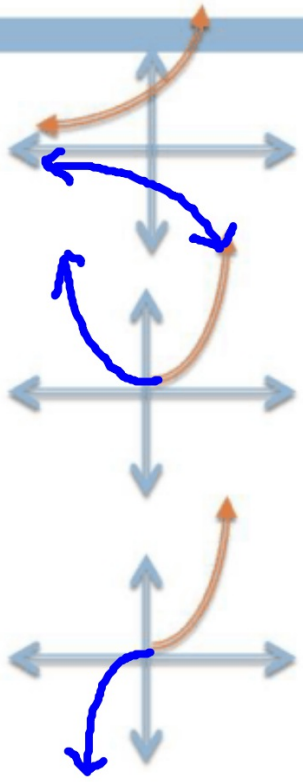
1.2) SYMMETRY

Three types

- **X- axis**: (horizontal)
  - (x, y) must equal (x, -y)
- **Y-axis**: (vertical)
  - (x, y) must equal (-x, y)
- **Origin:**
  - (x, y) must equal (-x, -y)



Test for symmetry

- **X-axis**: Plug in (-y) for y and solve
- **Y-axis:** Plug in (-x) for x and solve
- **Origin:** Plug in (-x, -y) for (x, y) and solve

- ** If you get the original problem, then it has that symmetry**

Examples

1.) $x - y^2 = 1$

x-axis Yes

$x - (-y)^2 = 1$

$x - y^2 = 1$

y-axis No

$-x - y^2 = 1$

$x + y^2 = -1$

origin No

$-x - (-y)^2 = 1$

$-x - y^2 = 1$

$x + y^2 = -1$

2.) $x^2 + y = 10$

x-axis No

$x^2 - y = 10$

y-axis Yes

$(-x)^2 + y = 10$

$x^2 + y = 10$

origin No

$(-x)^2 + -y = 10$

$x^2 - y = 10$

Examples

3.) $y = x^5$

X-axis No

$-y = x^5$

$y = -x^5$

y-axis No

$y = (-x)^5$

$y = -x^5$

Origin Yes

$-y = (-x)^5$

$-y = -x^5$

$y = x^5$

4.) $y = \dfrac{6}{x^2 - 4}$

X-axis No

$-y = \dfrac{6}{x^2 - 4}$

Y-axis Yes

$y = \dfrac{6}{(-x)^2 - 4}$

$y = \dfrac{6}{x^2 - 4}$

Origin No

$-y = \dfrac{6}{(-x)^2 - 4}$

$-y = \dfrac{6}{x^2 - 4}$

pg 10 # 31-35 odd

22-23 # 5-13 odd

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