W. U.

STATE THE TYPE OF GRAPH & THE FLIPS & SHIFTS OF EACH

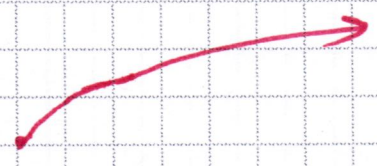
① $y = (x+4)^2 - 2$

② $y = |x-5| - 6$

③ $y = \sqrt{x+2} + 7$

④ $y = (x^2 - 5) - 6$

⑤ $y = -(x-2) + 5$

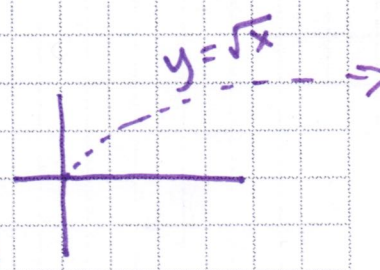


Key

① parabola (points up) left 4 down 2

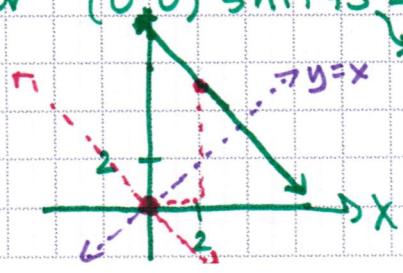
② Absolute Value (points up) Rt 5 down 6

③ radical function (points up & right) Lt 2 up 7



④ parabola (points up) no horz shift down 11

⑤ Linear (0,0) shifts ⇒ flips over x-axis
Rt 2 up 5

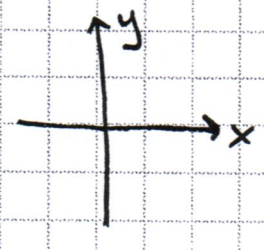


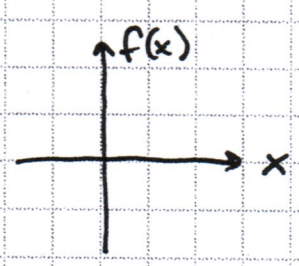
◎ To understand relations and function notation

relations- All Graphs

Line: $y = mx + b \Rightarrow f(x) = mx + b$

Quad $y = ax^2 + bx + c \Rightarrow f(x) = ax^2 + bx + c$





$y \longleftrightarrow f(x)$ f "of" x

$f(x) = 3x + 6$ $g(x) = 4x - 2$

$f(12) \Rightarrow$ use $f(x)$ function

$f(12) = 3(12) + 6$

$36 + 6$

$f(12) = 42$

input output

$(12, 42)$

$g(-3) \Rightarrow$ use $g(x)$ function

$g(-3) = 4(-3) - 2$

$-12 - 2$

$g(-3) = -14$

$(-3, -14)$

pt $(2, \frac{8}{9})$ on graph

$f(x) = \frac{3x+2}{8x-7} \Rightarrow f(2) = \frac{3(2)+2}{8(2)-7} = \boxed{\frac{8}{9}} = f(2)$

Why is $f(x)$ a better notation than "y" $\Rightarrow$ Tells you the entire point $(x, y) \rightarrow (x, f(x))$

$f(x) = 3x + 6$

$f(x) = 12$ what is the x value when $y = 12$

find input

output

$12 = 3x + 6$

$-6 \qquad -6$

$\Rightarrow$ solve for x b/c you were given the "y"

$6 = 3x$

$2 = x$

$\boxed{f(2) = 12}$

$x = 2$

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

$f(x) =$

$f(2) = 5$

$x = ?$

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

$f(x) = 15$

$$15 = x^2 - 1$$
$$+1 \qquad +1$$
$$16 = x^2$$
$$\boxed{\pm 4 = x}$$