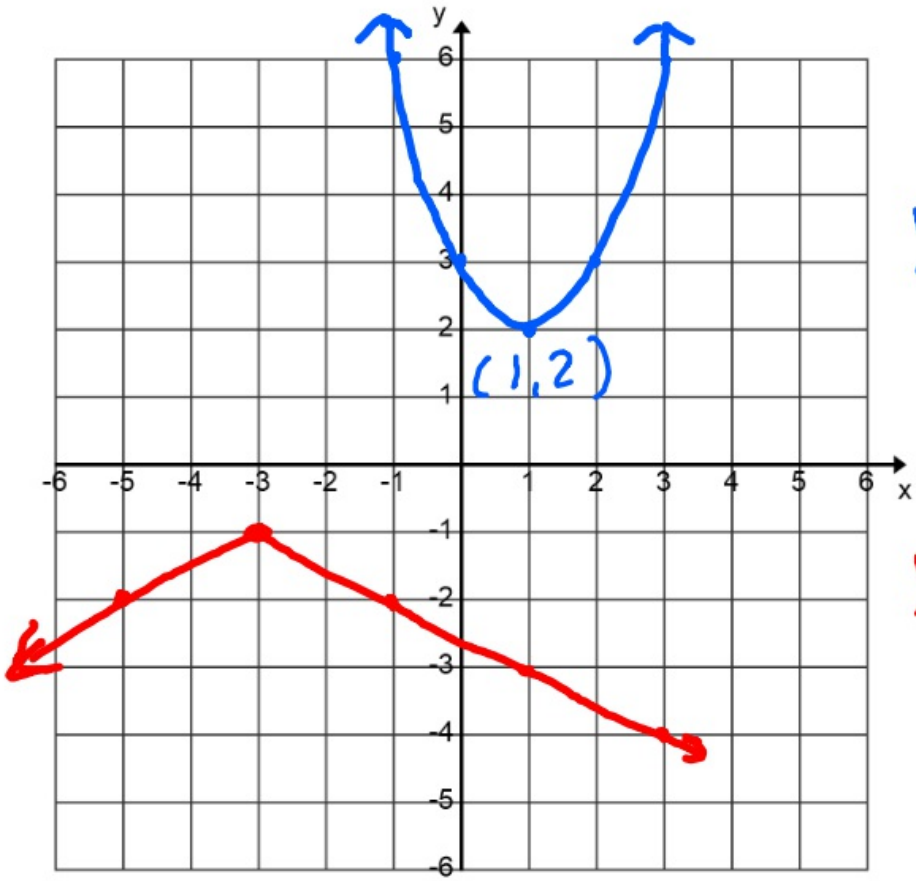
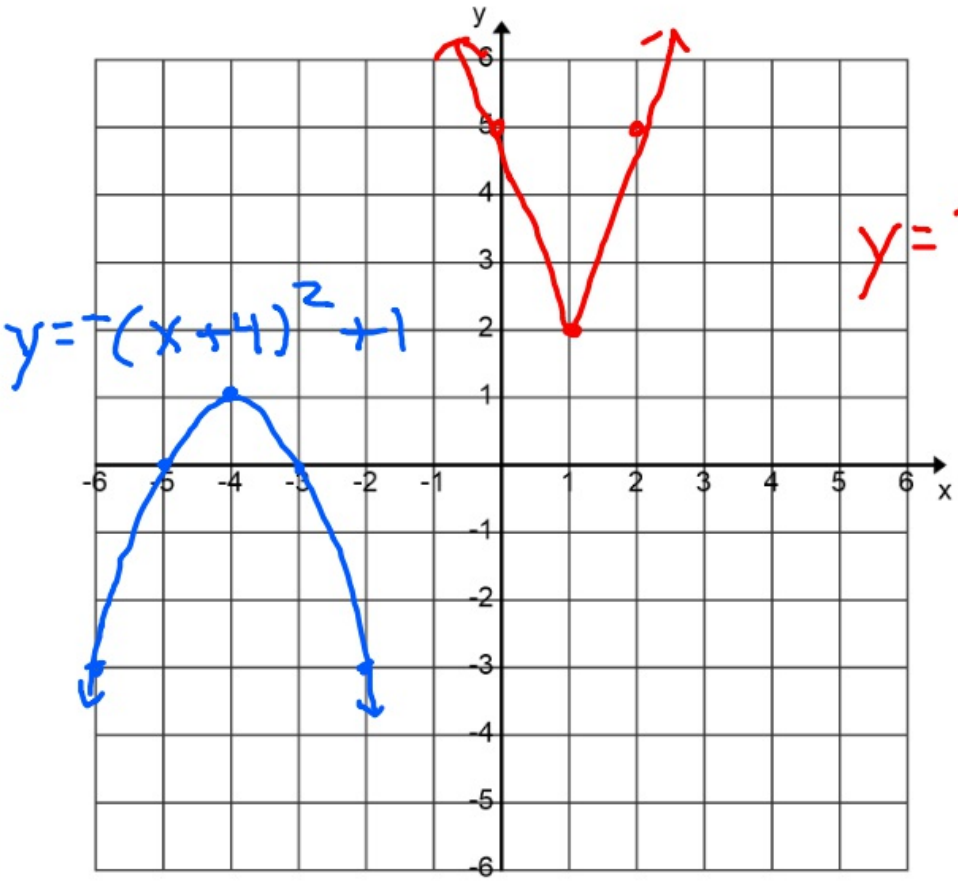


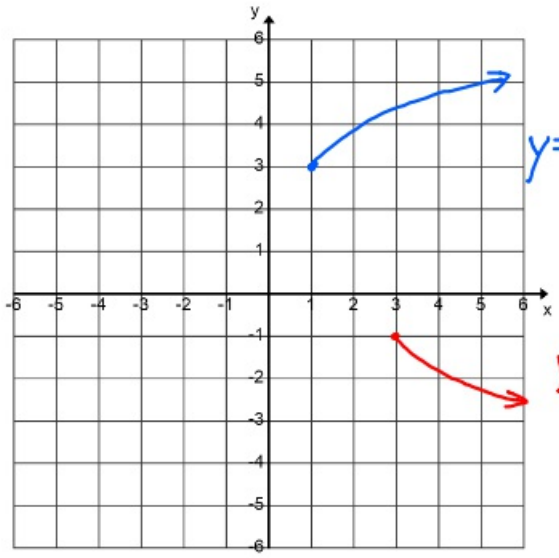
$y = (x-1)^2 + 2$

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



$y = -(x+4)^2 + 1$

$y = 3|x-1| + 2$



$y = \sqrt{x-1} + 3$

$y = -\sqrt{x-3} - 1$

① $y = \dfrac{x^4 + 3x - 1}{x + 5}$

Horizontal Asymptote:

Bobo Both Eats DC

None

Vertical Asymptote

$x + 5 = 0$

$x = -5$

② $y = \dfrac{6x + 7}{3x - 1}$

Horizontal

Bobo Both Eats DC

$y = \frac{6}{3}$

$y = 2$

Vertical

$3x - 1 = 0$

$+1 \quad +1$

$3x = 1$

$x = \frac{1}{3}$

③ $y = \dfrac{x^2+7x+1}{x+5}$

Slant:

$$x+5 \overline{)\, x^2+7x+1}$$

$x+2$

$-(x^2+5x)$

$2x+1$

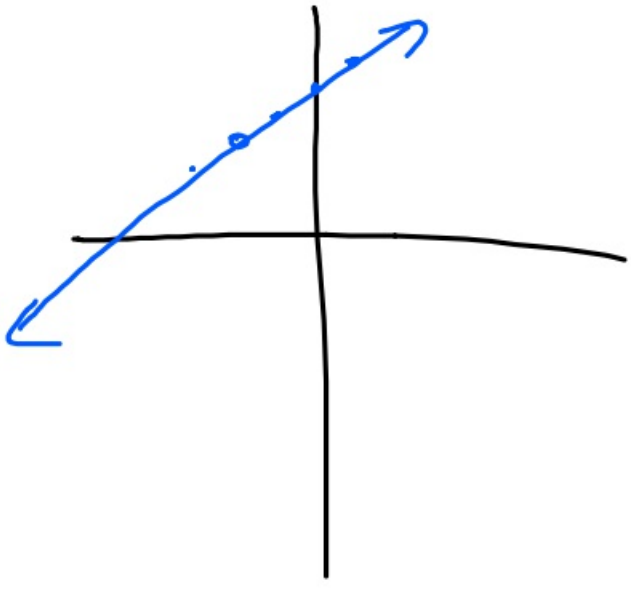
$2x+10$

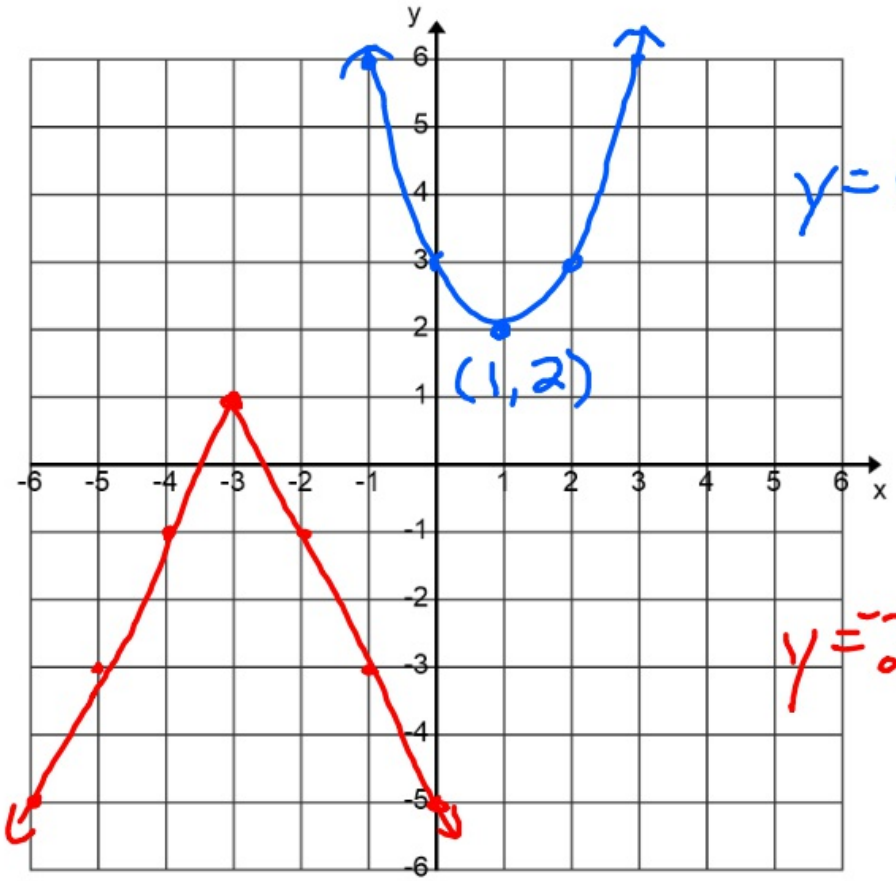
$y = x+2$

④ $y = \dfrac{x^2+7x+10}{x+2}$

$y = \dfrac{(x+2)(x+5)}{x+2}$

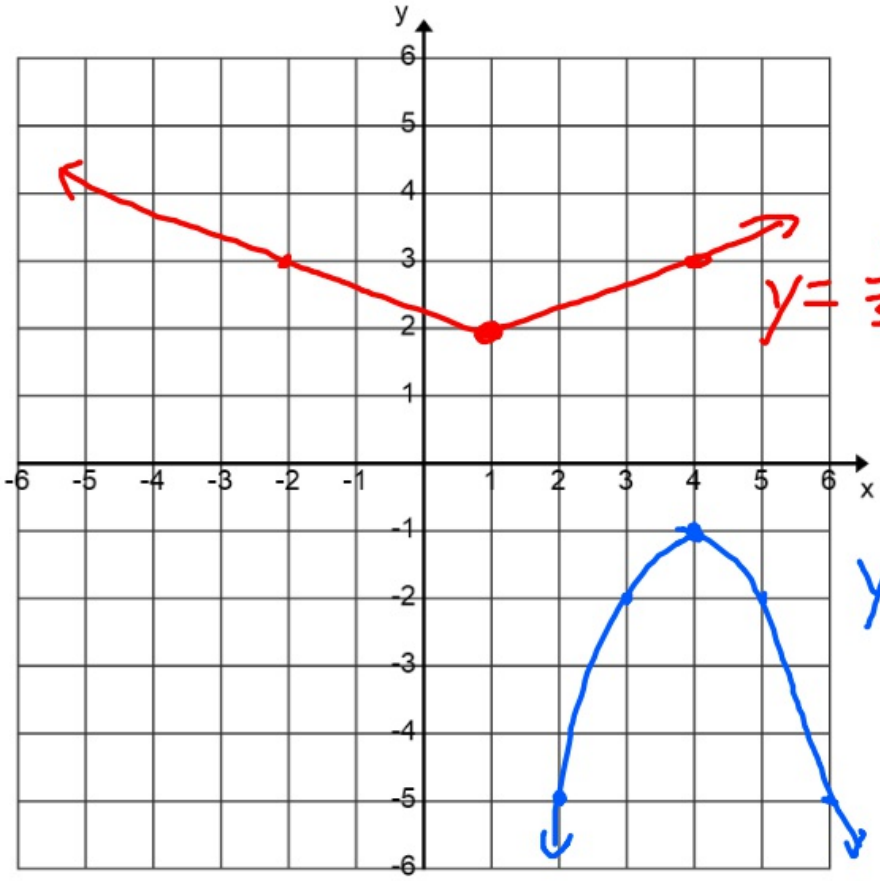
$y = x+5 \quad [x \neq -2]$





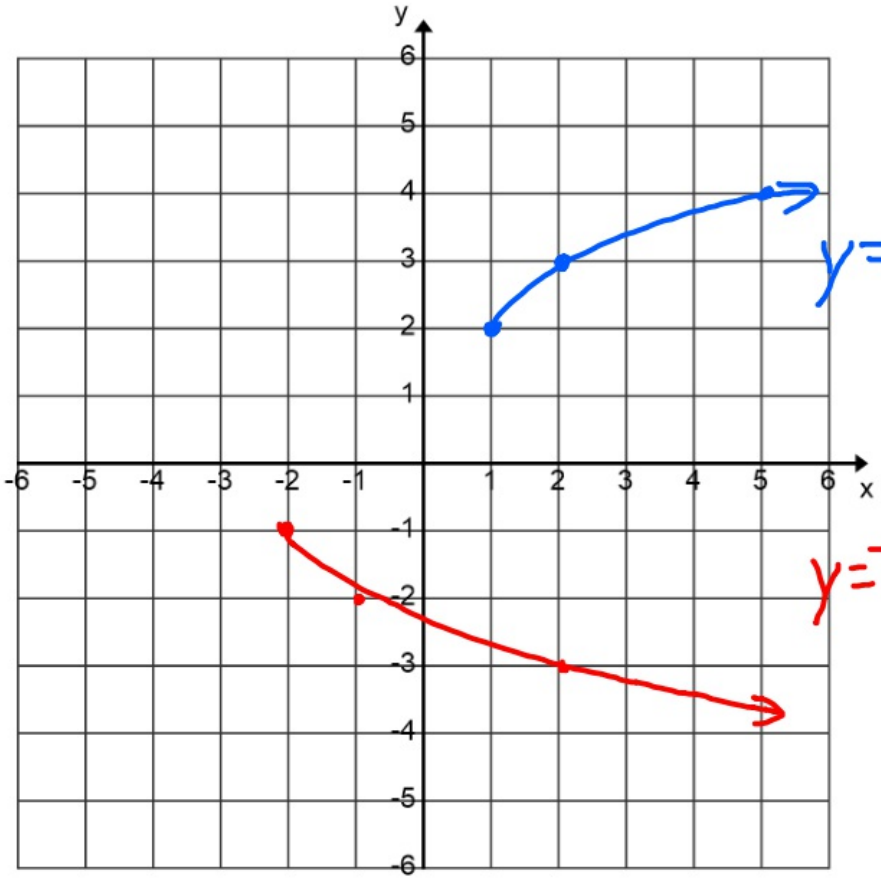
$y = (x-1)^2 + 2$

$y = -2|x+3|+1$



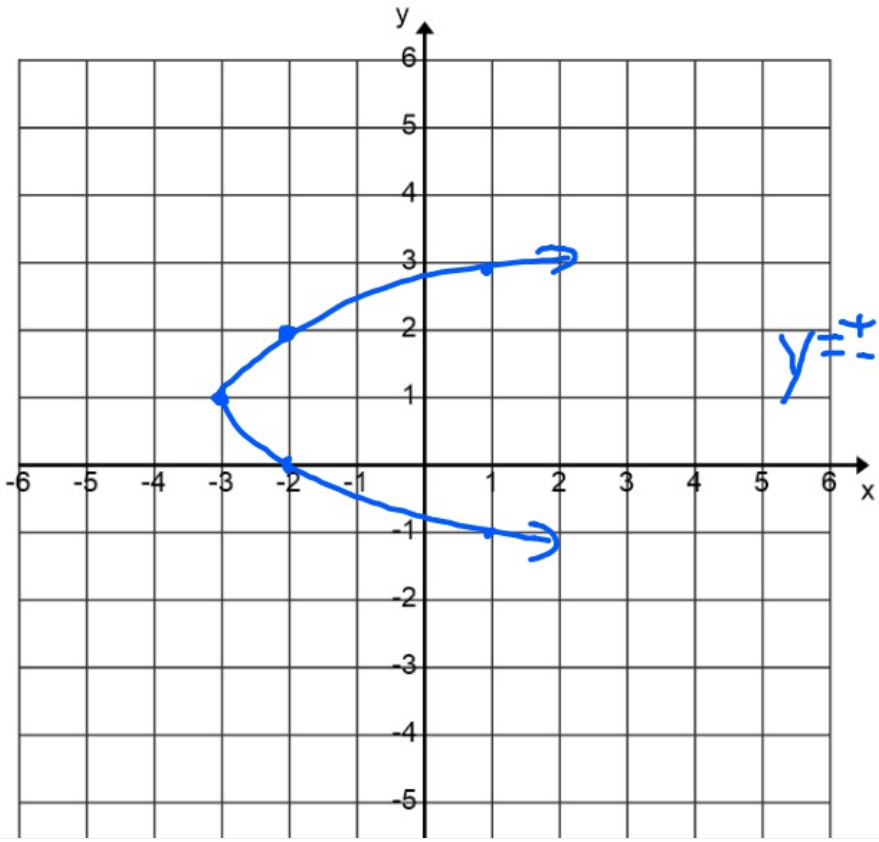
$y = \frac{1}{3}|x-1|+2$

$y = -(x-4)^2 - 1$



$y = \sqrt{x-1} + 2$

$y = -\sqrt{x+2} - 1$



$y = \pm\sqrt{x+3} + 1$

⑤ $y = \frac{x^4 + 6x^3 + 2x^2 - 7}{x - 8}$

Horizontal Asymptote

Bobo (Both) Eats DC

None

Vertical Asymptote

$x - 8 = 0$

$x = 8$

⑥ $y = \frac{5x^2 + 1}{x^2 + 7x + 10}$

Horizontal

Eats (DC)

$y = \frac{5}{1}$

$y = 5$

Vertical

$x^2 + 7x + 10 = 0$

$(x+2)(x+5) = 0$

$x + 2 = 0$ $\quad -2 \ -2$ $\quad x = -2$

$x + 5 = 0$ $\quad -5 \ -5$ $\quad x = -5$

⑦ $y = \frac{x^2 + 8x + 1}{x + 3}$

Slant since top is 1 degree more than bottom

$$x+3 \overline{)\, x^2 + 8x + 1}$$

$x + 5$

$-(x^2 + 3x)$

$5x + 1$

$5x + 15$

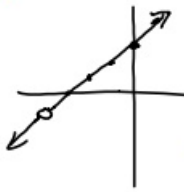
-14

Slant at $y = x + 5$

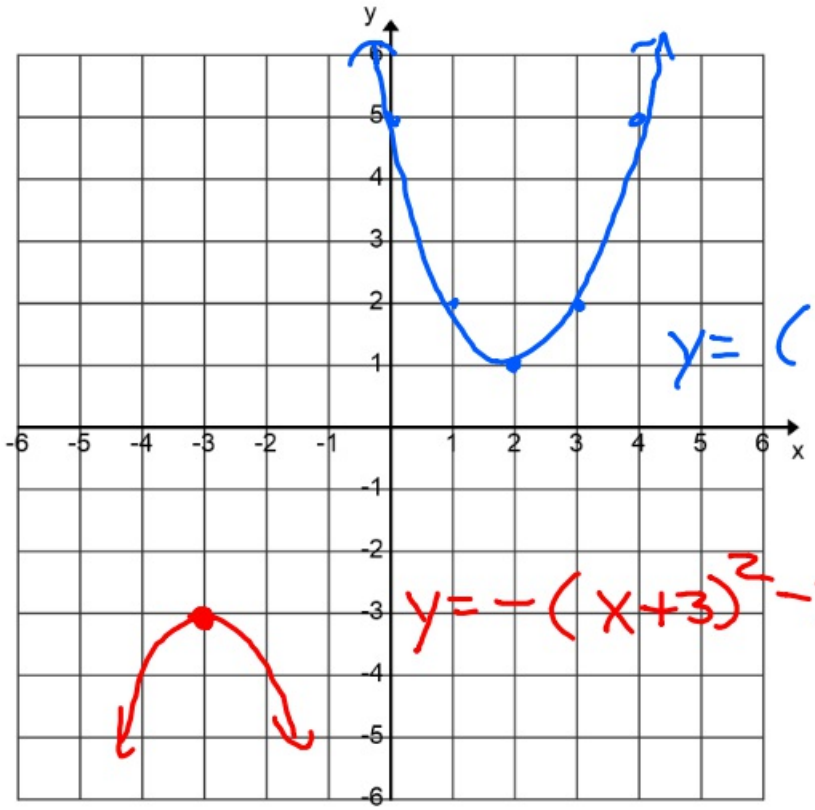
⑧ $y = \frac{x^2 + 7x + 12}{x + 4}$

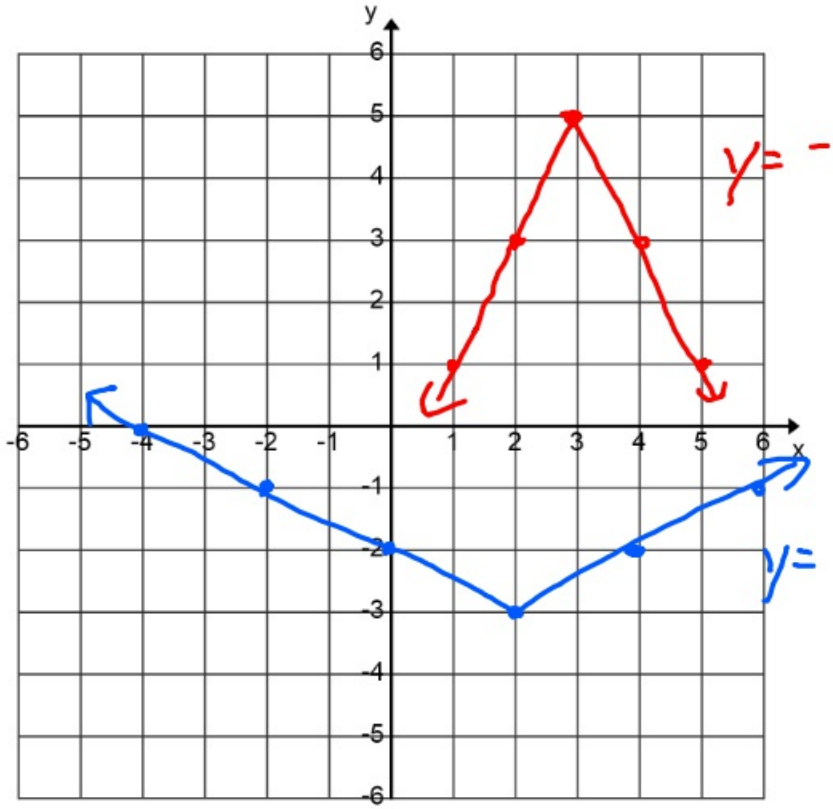
$y = \frac{(x+4)(x+3)}{x+4}$

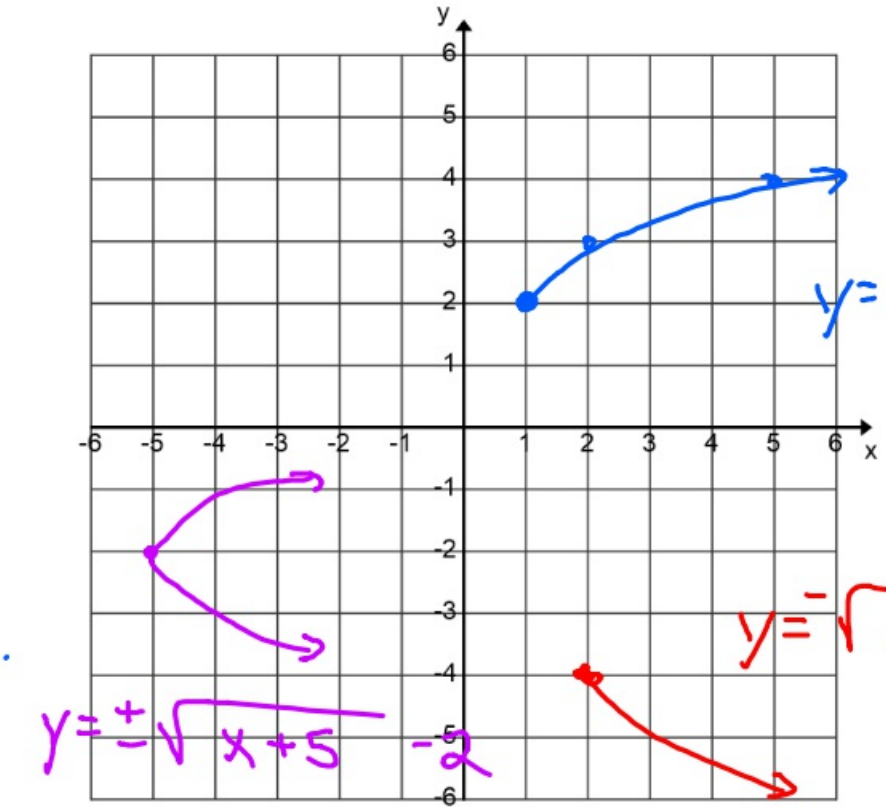
$y = x + 3 \ [x \neq -4]$



Hole at $x = -4$


y
x
y= (x-2)^2 +1
y= -(x+3)^2 -3


y
x
y= -2|x-3| +5
y= 1/2 |x-2| -3



(4) $y = \dfrac{x^4 + 6x^2 - 7}{x - 2}$

Horizontal Asymptote

Bobo **Botn** Eats DC

None

Vertical Asymptote

$x - 2 = 0$

$+2 \quad +2$

$x = 2$

⑤ $y = \dfrac{4x^2 - 7}{x^2 + 7x + 10}$

Horizontal

Bobo Bota Eats DC

$y = \frac{4}{1}$

$y = 4$

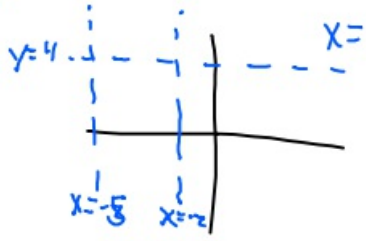
Vertical

$x^2 + 7x + 10 = 0$

$(x+2)(x+5) = 0$

$x + 2 = 0 \quad x + 5 = 0$

$x = -2 \quad x = -5$



⑥ $y = \dfrac{x^2 + 7x + 1}{x + 5}$

$$x+5 \overline{)\, x^2 + 7x + 1}$$

$x + 2$

$-(x^2 + 5x)$

$2x + 1$

$2x + 10$

-9

Slant is at

$y = x + 2$

⑦ $f(x) = \dfrac{x^2 + 8x + 12}{x + 2}$

$\dfrac{(x+2)(x+6)}{x+2}$

$f(x) = x + 6 \quad [x \neq -2]$

Hole at $x = -2$