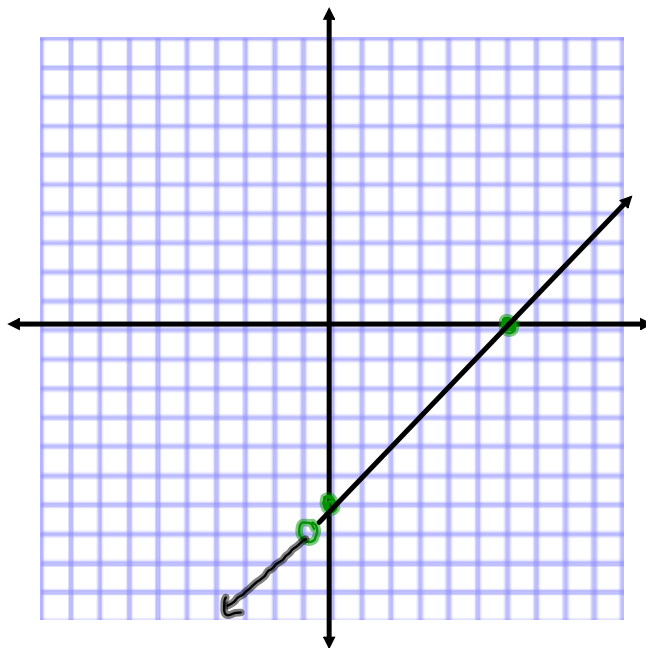


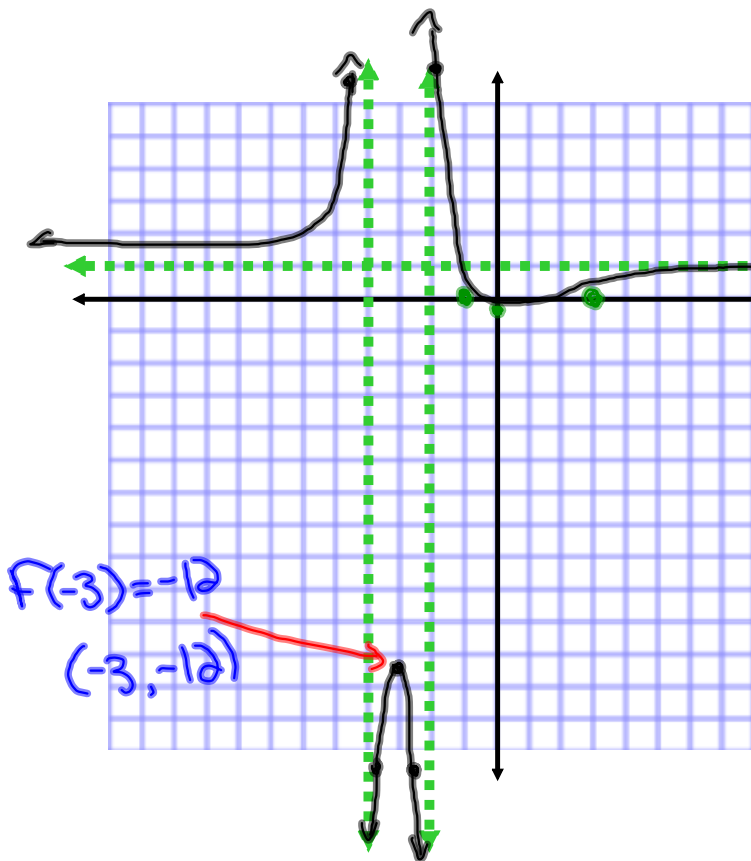
$$\textcircled{4} \text{ a) } f(x) = \frac{x^2 - 5x - 6}{x+1} = \frac{(x-6)\cancel{(x+1)}}{\cancel{(x+1)}} = x-6$$

① Roots:  $x=6$     ② V.A.: None    ③ O.A.:  $y=x-6$     ④ Holes:  $x=-1$     ⑤ y int:  $y=-6$



$$\textcircled{4} \text{ b) } f(x) = \frac{x^2 - 2x - 3}{x^2 + 6x + 8} = \frac{(x-3)(x+1)}{(x+2)(x+4)}$$

① roots  $x = -1, 3$     ② V.A.  $x = -4, -2$     ③ H.A.  $y = 1$     ④ Holes: None    ⑤ y.int  $y = -3/8$



Check Behaviour near V.A.

$$x = -4$$

$$\lim_{x \rightarrow -4^-} f(x) = +\infty$$

$$\lim_{x \rightarrow -4^+} f(x) = -\infty$$

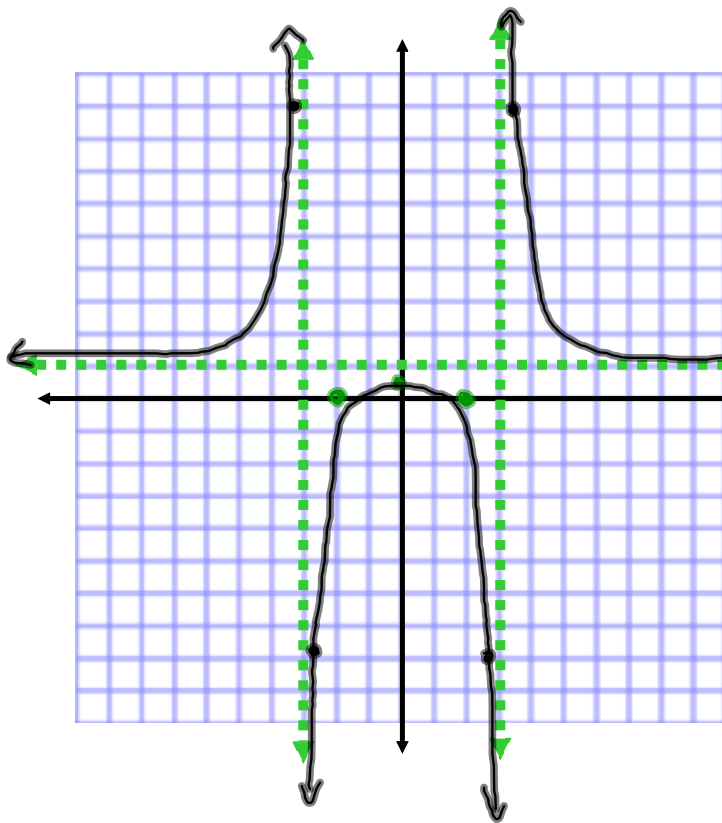
$$x = -2$$

$$\lim_{x \rightarrow -2^-} f(x) = -\infty$$

$$\lim_{x \rightarrow -2^+} f(x) = +\infty$$

$$\textcircled{4} \text{ c) } f(x) = \frac{x^2 - 4}{x^2 - 9} = \frac{(x+2)(x-2)}{(x+3)(x-3)}$$

- ① Roots:  $x = \pm 2$       ② V.A.  $x = \pm 3$       ③ H.A.  $y = 1$       ④ Holes: None      ⑤ y int  $y = 4/9$



Check the behaviour near the V.A.

$$x = -3$$

$$\lim_{x \rightarrow -3^-} f(x) = +\infty$$

$$\lim_{x \rightarrow -3^+} f(x) = -\infty$$

$$x = 3$$

$$\lim_{x \rightarrow 3^-} f(x) = -\infty$$

$$\lim_{x \rightarrow 3^+} f(x) = +\infty$$