

Graphing Rational Functions  
One of Each Type 2

Name Key!

1.  $f(x) = -\frac{1}{x-2} + 3$

Hole(s) none

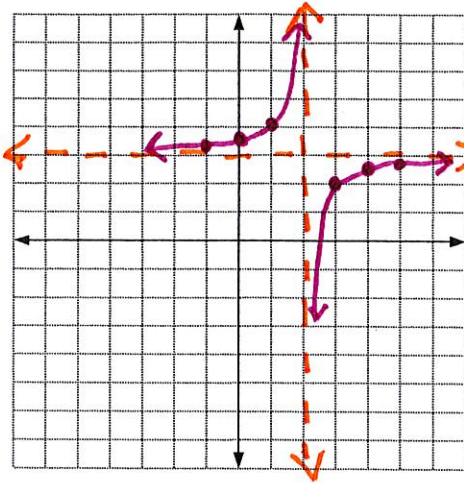
VA  $x=2$

HA  $y=3$

SA none

Domain  $(-\infty, 2) \cup (2, \infty)$

Range  $(-\infty, 3) \cup (3, \infty)$



(transformation)

2.  $f(x) = \frac{2(x-3)}{x+1}$

**Option 2**

Hole(s) none

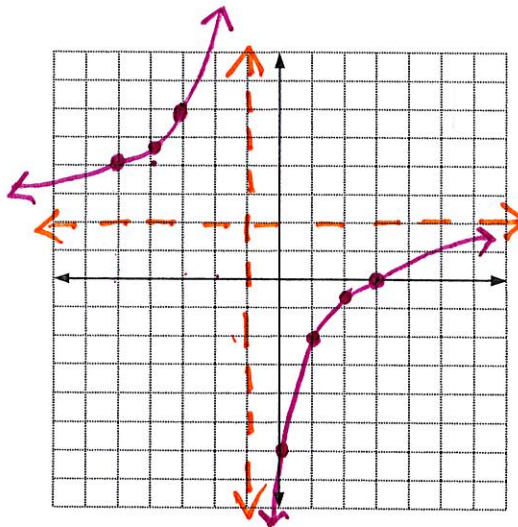
VA  $x=-1$

HA  $y=2$

SA none

Zero(s)  $(3, 0)$

Y-int  $(0, -6)$



(one VA/one HA)

3.  $f(x) = \frac{(x+3)(x-1)}{x^2+2x-3} = \frac{x-1}{x+2}$

**Option 2**

Hole(s)  $(-3, 4)$

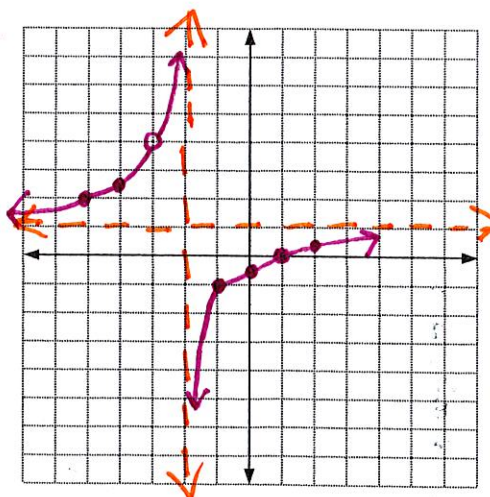
VA  $x=-2$

HA  $y=1$

SA none

Zero(s)  $(1, 0)$

Y-int  $(0, -1/2)$

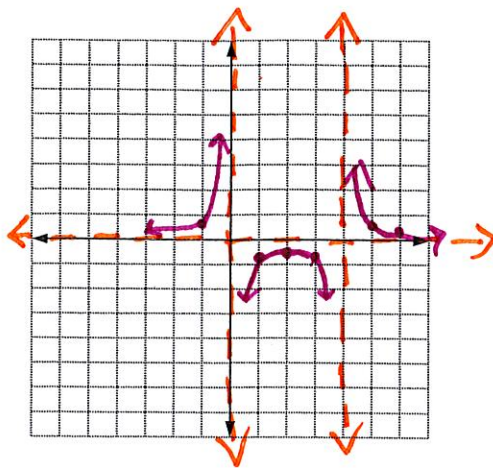


(hole)

**Option 1**

$$4. f(x) = \frac{2}{x^2 - 4x} = \frac{2}{x(x-4)}$$

- Hole(s) none
- VA  $x=0$   $x=4$
- HA  $y=0$
- SA none
- Zero(s) none
- Y-int none

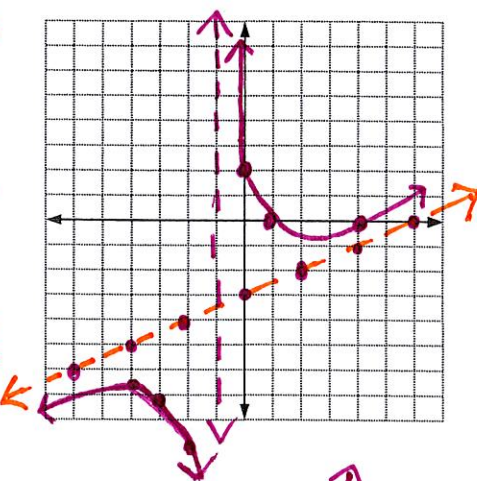


(2 VA)

just for fun !!

$$5. f(x) = \frac{x^2 - 5x + 4}{2x + 2} = \frac{(x-4)(x-1)}{2(x+1)}$$

- Hole(s) none
- VA  $x=-1$   $x+1=0$
- HA none
- SA  $y = \frac{1}{2}x - 3$
- Zero(s)  $(4,0)$   $(1,0)$   $x-4=0$   
 $x-1=0$
- Y-int  $(0,2)$   $\frac{4}{2} = 2$

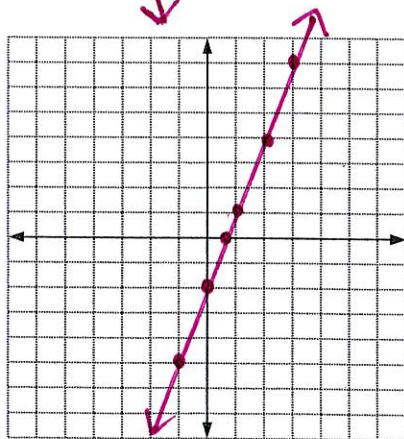


**Option 1** (slant)

$$\begin{array}{r} y = \frac{1}{2}x - 3 \\ 2x+2 \overline{) x^2 - 5x + 4} \\ \underline{-x^2 + x} \phantom{+ 4} \\ -6x + 4 \\ \underline{+6x + 6} \\ -10 \end{array}$$

$$6. f(x) = \frac{(3x-2)(x+5)}{x+5} = \frac{3x-2}{1}$$

- Hole(s)  $(-5, -17)$
- VA none
- HA none
- SA  $y = 3x - 2$
- Zero(s)  $(\frac{2}{3}, 0)$
- Y-int  $(0, -2)$



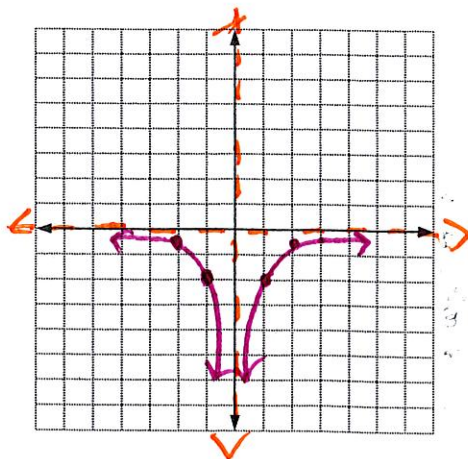
(line with hole)

**Option 1**

$$\begin{array}{r} -5 \overline{) 3 \quad 13 \quad -10} \\ \underline{\phantom{-} 15} \phantom{- 10} \\ 3 \quad -2 \quad 0 \end{array}$$

$$7. f(x) = -\frac{2}{x^2} \quad \text{Option 1}$$

- Hole(s) none
- VA  $x=0$
- HA  $y=0$
- SA none
- Zero(s) none
- Y-int none



(unusual) !

(not important for quiz!)