

Trig 4.6

- = Solve rational equations
- <> Solve rational inequalities
- ~~(Defer partial fractions)~~

rational

rational expression

$$\frac{1}{x-1}$$

rational equation

zeros (of a function) $\rightarrow$ solution

excluded value $\rightarrow x \rightarrow$ undefined

interval

test point

$t = 0$ ev

Equations:

· clear denominators

· solve

· check solutions

(why?)

$$\frac{12}{2} + 2 - 8 = 0$$

$$12 \cdot \frac{12}{t} + t - 8 = 0$$

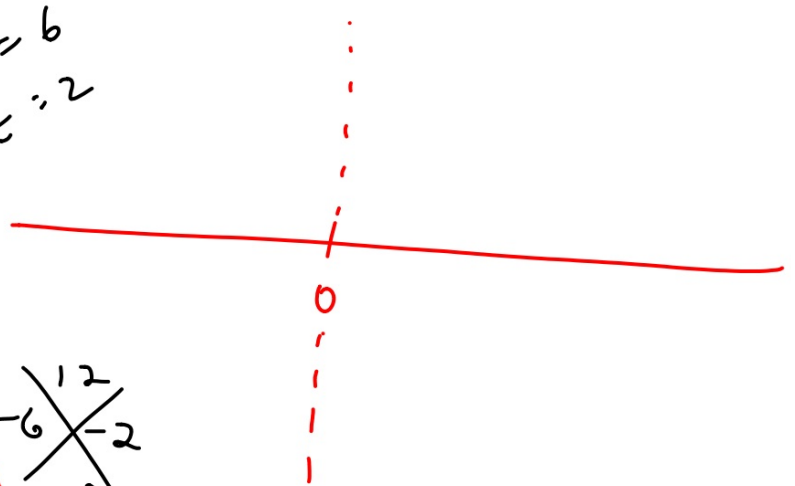
$$\begin{array}{r} 12 \\ -6 \quad -2 \\ \hline -8 \end{array}$$

$$t = 6$$

$$t = 2$$

$$t^2 - 8t + 12 = 0$$

$$(t-6)(t-2) = 0$$



$$\left(-\frac{1}{34}\right) = \frac{-34-34}{2(-34)(-34)} = \left(\frac{-68}{2312}\right) \text{ E V } m=0$$

$$13. \frac{1}{m} = \frac{m-34}{2m^2}$$

$$\begin{array}{r} 2m = m-34 \\ -m \quad -m \\ \hline m = -34 \end{array}$$

$$14. \frac{2}{y+2} + \frac{3}{y} = \frac{-y}{y+2}$$

$$2y + 3y + 6 = -y^2$$

$$y^2 + 5y + 6 = 0$$

$$\frac{3}{5} \times \frac{6}{2} (y+3)(y+2) = 0$$

$$y = -3 \quad y = -2$$

$$\in \vee \quad y = 0 \quad y = -2$$

$$\frac{2}{-1} + \frac{3}{-3} = \frac{-3}{-1}$$

$$-2 + -1 = -3$$

$$15. \frac{10}{n^2-1} + \frac{2n-5}{n-1} = \frac{2n+5}{n+1}$$

$(n+1)(n-1)$ $(n+1)(n-1)$ $(n+1)(n-1)$
 $(n+1)(n-1)$

(maybe)

Factor to clear denoms.

$$\text{EV } n=1 \quad n=-1$$

$$10 + (n+1)(2n-5) = (n-1)(2n+5)$$

$$10 + 2n^2 - 3n - 5 = 2n^2 + 3n - 5$$

2 Solve $a + \frac{a^2 - 5}{a^2 - 1} = \frac{a^2 + a + 2}{a + 1}$.

Solve inequalities (**Zone defense**)

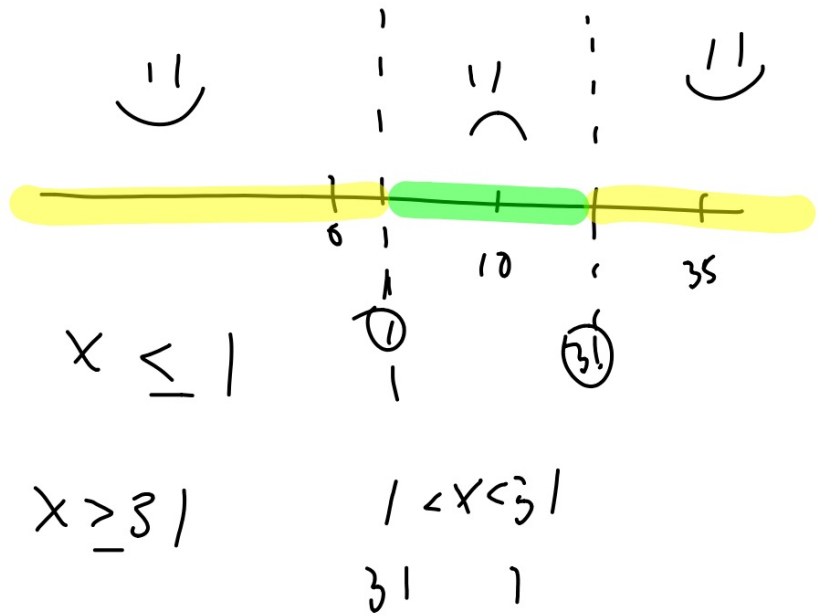
- find excluded values (denom =0)
- find zeros (use equation)
- test intervals (pos or neg)
- Answer the question

$$9.5 + \frac{1}{x} > \frac{16}{x}$$

$$10. 1 + \frac{5}{a-1} \leq \frac{7}{6}$$

$$1 + \frac{5}{-1} \leq \frac{7}{6}$$

$$-4 \leq \frac{7}{6}$$



29. $\frac{(x-3)(x-4)}{(x-5)(x-6)^2} \leq 0$