

**Calculator**

Below

Solve the polynomial inequality graphically.

13)  $x^3 - x^2 - 2x \geq 0$

$$x(x^2 - x - 2) \geq 0$$

$$x(x-2)(x+1) \geq 0$$

14)  $3x^4 - 5x^3 - 12x^2 + 12x + 16 < 0$

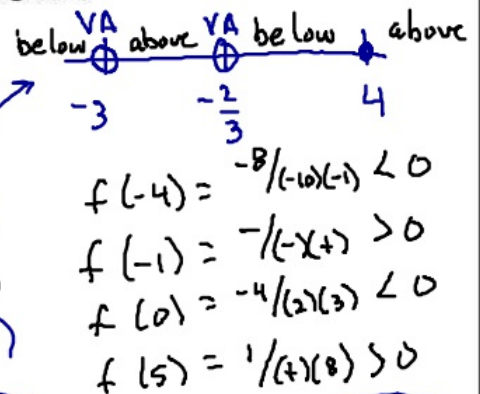
$(-\frac{4}{3}, -1)$

Determine the real values of x that cause the function to be a) zero, b) undefined, c) positive, and d) negative

A)  $f(x) = \frac{x-4}{(3x+2)(x+3)}$

Set top = 0  
Set bottom = 0

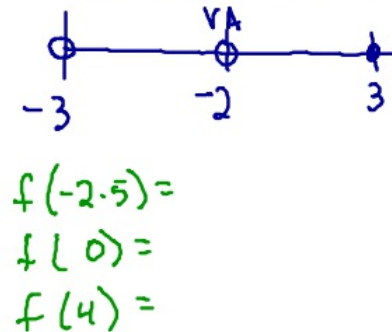
- a)  $f(x) = 0$   $x-4=0$   $x=4$
- b)  $f(x)$  und  $x \neq -2/3$   $x \neq -3$
- c)  $f(x) > 0$   $(-3, -2/3) \cup (4, \infty)$
- d)  $f(x) < 0$   $(-\infty, -3) \cup (-2/3, 4)$



because  $\sqrt{\quad}$  in denominator  
 ~~$\sqrt{x+3} \geq 0$~~   
 $\sqrt{x+3} > 0$   
 $x+3 > 0$   
 $x > -3$

B)  $f(x) = \frac{x-3}{(x+2)\sqrt{x+3}}$

- a)  $f(x) = 0$   $x=3$
- b)  $f(x)$  und  $x \neq -2$   
 $x > -3$



Since  $\sqrt{\quad}$  in numerator  
 $\sqrt{x-3} \geq 0$   
 $x-3 \geq 0$   
 $x \geq 3$

C)  $f(x) = \frac{\sqrt{x-3}}{(x+2)(x-5)}$

- a)  $f(x) = 0$   $x=3$
- b)  $f(x)$  und  $x \neq 5$   $x \neq -2$
- c)  $f(x) < 0$   $(3, 5)$
- d)  $f(x) > 0$   $(5, \infty)$

