Lecture 5

Monday, April 10, 2023 10:19 AM

* Questions...

Sign chart

Ex Solve the inequality

$$\frac{x^2-x}{x-2} > 0$$

$$\frac{x(x-1)}{x-2} > 0$$

x		0		1		2	
x	$-$	0	$+$	$+$	$+$	$+$	$+$
$x-1$	$-$	$-$	$-$	0	$+$	$+$	$+$
$x-2$	$-$	$-$	$-$	$-$	$-$	0	$+$
$\frac{x(x-1)}{x-2}$	$-$	0	$+$	0	$-$	$\|\|$	$+$

Conclusion:

$x \in (0,1) \cup (2,\infty)$

Ex Find the domain of

$$f(x) = \ln(4x-8) + \ln(x^2+9x+18)$$

We need $4x-8>0$ and $x^2+9x+18>0$

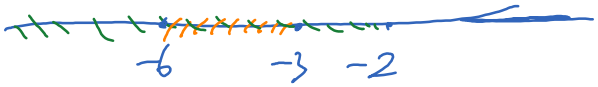
$\rightsquigarrow$ We need $4(x-2)>0$ and $(x+3)(x+6)>0$.

$\rightsquigarrow$ We need $x-2>0$ and $(x+3)(x+6)>0$.

x		-6		-3	
$x+3$	$-$		$-$	0	$+$
$x+6$	$-$	0	$+$		$+$
$(x+3)(x+6)$	$+$	0	$-$	0	$+$

$(x+3)(x+6)>0$ means

$x \in (-\infty, -6) \cup (-3, \infty)$.



Conclusion:

$x \in (-2, \infty)$