Bellwork Sept. 4

Solve for x:

$$\frac{x+4}{2x-1} > 0$$

What is a sign diagram?

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- a way to chart where a function is positive, negative, zero, or undefined

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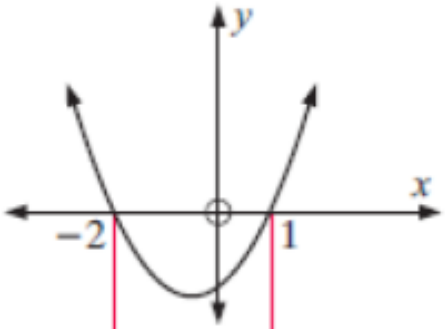
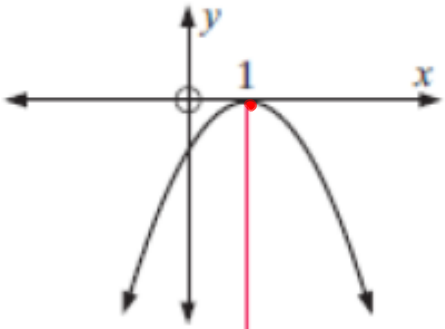
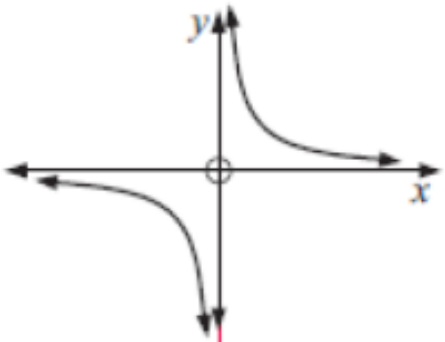
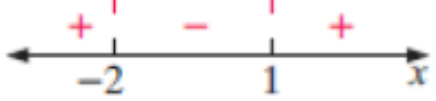
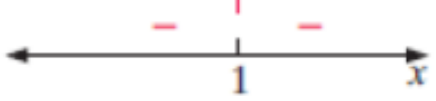
Steps

- Find zeros of all factors in numerators and denominators.
- Draw a numberline and label points indicating the zeros and discontinuities.
- Test signs in each region.

Function	$y = (x+2)(x-1)$	$y = -2(x-1)^2$	$y = \frac{4}{x}$
Graph			
Sign diagram			

$$\frac{x+4}{2x-1} > 0$$

Draw a sign diagram for each of these:

① $\frac{x+2}{x-1}$

② $\frac{(x+2)(x-1)}{3-x}$

③ $\frac{3x+2}{x-2} - \frac{x-3}{x+3}$

① $\frac{x+2}{x-1}$

② $\dfrac{(x+2)(x-1)}{3-x}$

$$\frac{3x+2}{x-2} - \frac{x-3}{x+3}$$

CW: Work problem #4, p. 69

HW: Read pp. 52-69

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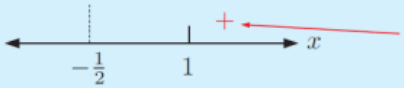
qs on last hw?
read chapter two
next summative on wed sept twelfth

Example 13 Self Tutor

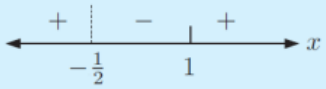
Draw a sign diagram for $\dfrac{x-1}{2x+1}$.

$\dfrac{x-1}{2x+1}$ is zero when $x = 1$ and undefined when $x = -\frac{1}{2}$.



When $x = 10$, $\dfrac{x-1}{2x+1} = \frac{9}{21} > 0$

Since $(x-1)$ and $(2x+1)$ are distinct, linear factors, the signs alternate.



4 Draw sign diagrams for:

a $\dfrac{x+2}{x-1}$ **b** $\dfrac{x}{x+3}$ **c** $\dfrac{2x+3}{4-x}$

d $\dfrac{4x-1}{2-x}$ **e** $\dfrac{3x}{x-2}$ **f** $\dfrac{-8x}{3-x}$

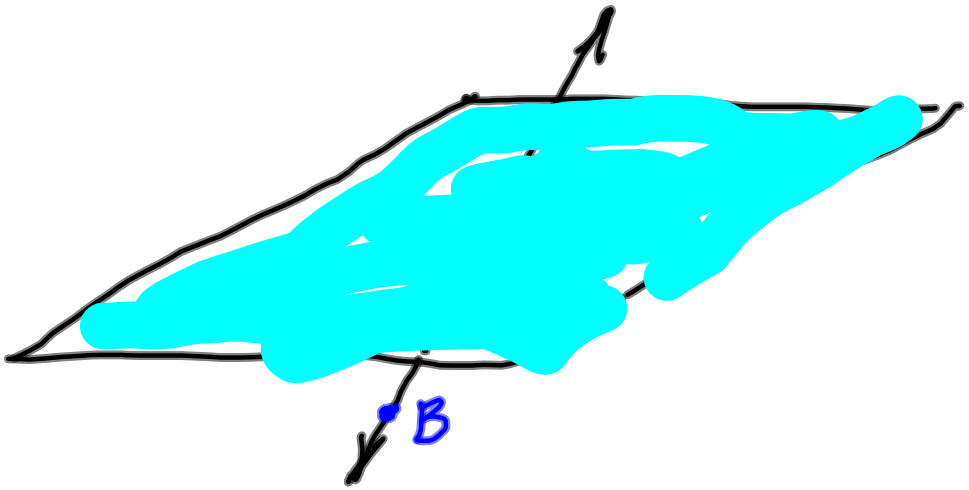
g $\dfrac{(x-1)^2}{x}$ **h** $\dfrac{4x}{(x+1)^2}$ **i** $\dfrac{(x+2)(x-1)}{3-x}$

j $\dfrac{x(x-1)}{2-x}$ **k** $\dfrac{x^2-4}{-x}$ **l** $\dfrac{3-x}{2x^2-x-6}$

m $\dfrac{x^2-3}{x+1}$ **n** $\dfrac{x^2+1}{x}$ **o** $\dfrac{x^2+2x+4}{x+1}$

p $\dfrac{-(x-3)^2(x^2+2)}{x+3}$ **q** $\dfrac{-x^2(x+2)}{5-x}$ **r** $\dfrac{x^2+4}{(x-3)^2(x-1)}$

s $\dfrac{x-5}{x+1}+3$ **t** $\dfrac{x-2}{x+3}-4$ **u** $\dfrac{3x+2}{x-2}-\dfrac{x-3}{x+3}$


B