

# MA 109: September 27

Domain and Range: Domain of a Formula

## Start of Class

### Instructor Information

Name:

Email:

Office Hours:

## Warm-up Questions

## Notes

### Examples

Find the domain of  $f(x) = \sqrt{3x-1}$

can't take a square root of a negative, so domain is where

$$3x-1 \geq 0$$

$\swarrow \sqrt{0} = 0$   
okay ✓

Solve:

$$3x-1 \geq 0$$

+1 +1

$$\frac{3x}{3} \geq \frac{1}{3}$$

$$x \geq \frac{1}{3}$$



domain:  $[\frac{1}{3}, \infty)$

Find the domain of  $g(x) = \frac{1}{\sqrt{3x-1}}$

can't take a square root of a negative and can't divide by 0, so domain is where

$$3x-1 > 0$$

not  $\geq$

Solve:

$$3x-1 > 0$$

+1 +1

$$\frac{3x}{3} > \frac{1}{3}$$

$$x > \frac{1}{3}$$



domain:  $(\frac{1}{3}, \infty)$

Example: Find the domain of  $h(x) = \frac{5x+2}{7-x}$

← numerator does not cause problems, so can ignore it

↗ can't divide by 0

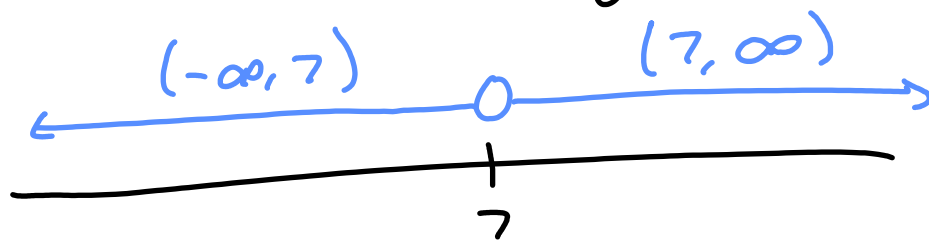
so, the domain is everything except where  $7-x=0$

$$\text{Solve: } 7-x=0$$

$$\begin{array}{r} -7 \qquad -7 \\ \hline -x = -7 \\ \hline -1 \quad -1 \end{array}$$

$$x = 7$$

remember: this is where the problem is, so the domain is everything except 7



domain.  $(-\infty, 7) \cup (7, \infty)$

## End of Class

Write a summary of what you learned today:

What questions do you have about the material from today?

What do you need to do between now and the next class meeting?