1-1/1-2 Linear Functions and Graphs

Learning Objectives:

1. I can find the slope of a line.

2. I can write the equation of a line in slope intercept and point slope form.

3. I can find the domain and range for a variety of functions.

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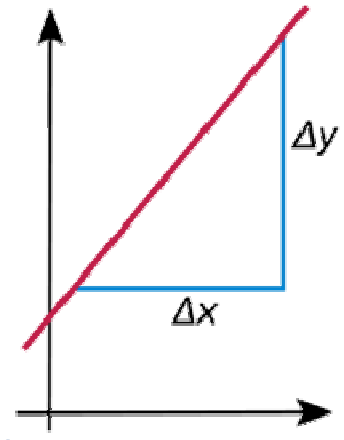
Slope

$$slope = \frac{rise}{run} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$



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Slope Intercept Form of a Line

$$y = mx + b$$

Point Slope Form of a Line

$$y - y_1 = m(x - x_1)$$

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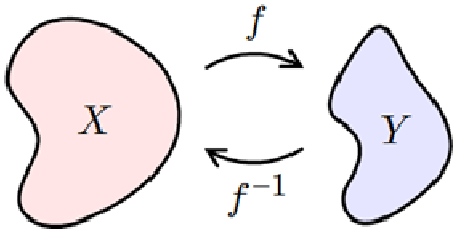

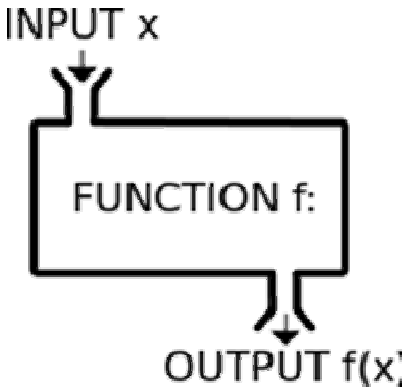

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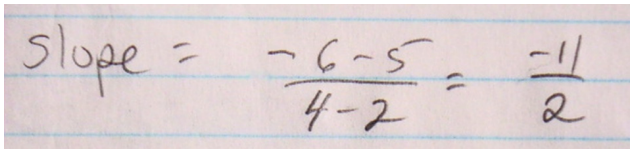
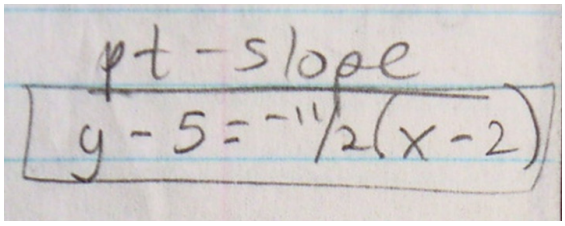
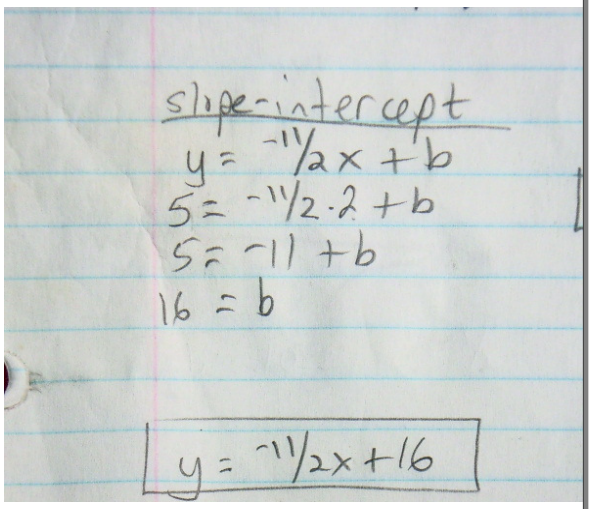
Ex1. Write the equation of the line passing through the points (2,5) and (4,-6) in both forms.







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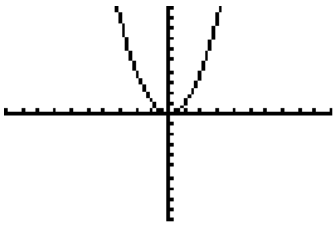
Ex2. Graph each function. Identify the domain and range.

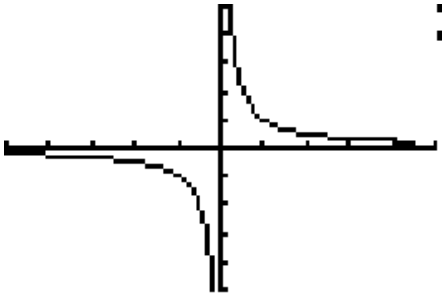
1. $y = x^2$



D: All Real #'s $\mathbb{R}$

R: $y \geq 0$

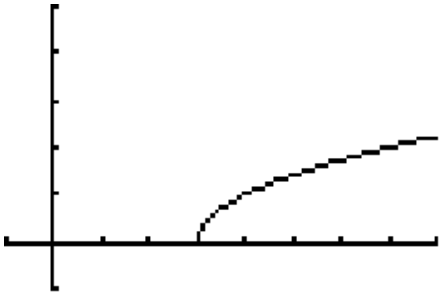
2. $y = \frac{1}{x}$



D: $x \neq 0$ $(-\infty, 0) \cup (0, \infty)$

R: $y \neq 0$

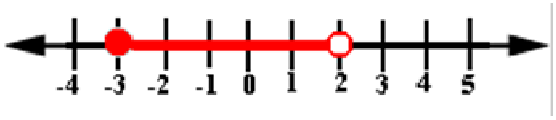
3. $y = \sqrt{x-3}$



D: $x \geq 3$ $[3, \infty)$

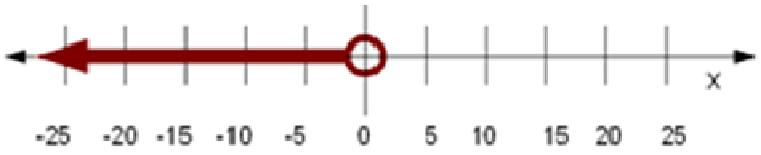
R: $y \geq 0$ $[0, \infty)$

Inequality vs Set Notation



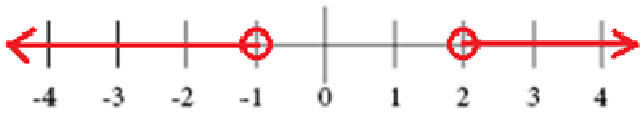
$-3 \le x < 2$

$[-3, 2)$



$x < 0$

$(-\infty, 0)$



$x < -1 \quad or \quad x > 2$

$(-\infty, -1) \quad \& \quad (2, \infty)$

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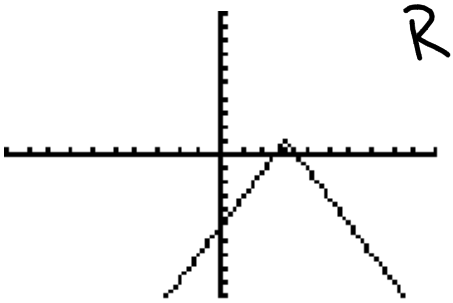
4. $y = -2|x-3|+1$

D: $(-\infty, \infty)$

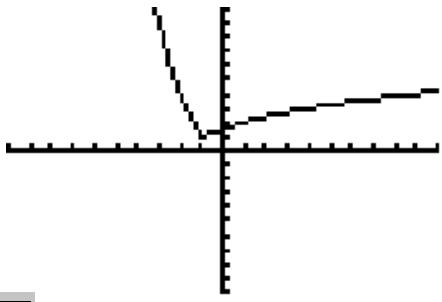
R: $(-\infty, 1]$

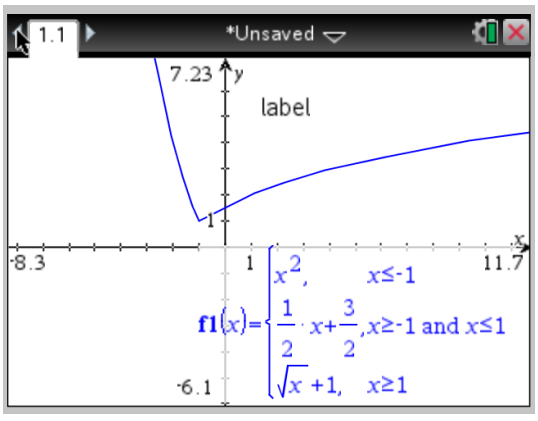
Plot1 Plot2 Plot3
\Y1=-2|X-3|+1
\Y2=
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=



5. $$y = \begin{cases} x^2 & \text{if } x < -1 \\ 1/2x + 3/2 & \text{if } -1 \le x < 1 \\ \sqrt{x}+1 & \text{if } x \ge 1 \end{cases}$$

Plot1 Plot2 Plot3
\Y1=(X^2)(X<-1)
\Y2=(1/2X+3/2)(
\Y3=(√(X)+1)(X≥1)
\Y4=





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Homework

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