The following table represents a linear function.

Write a y = mx + b equation (Slope-Inercept Eq) to model this data.

X	Y
2	1
5	-8
11	-26
23	-62

First: Find the slope $m = \frac{1-(-8)}{2-5} = \frac{9}{-3} = -3$

after finding slope you can substitute this into either the Slope-Intercept Form or the Point-Slope Form.

Slope-Intercept:

$y = -3x + b$

$1 = -3(2) + b$

$1 = -6 + b$

$7 = b$

$y = -3x + 7$

Point-Slope:

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

$y - 1 = -3(x - 2)$

$y - 1 = -3x + 6$

$+1 \quad +1$

$y = -3x + 7$

Exponential Function:

- Created by repeatedly multiplying some initial value by a constant.
- An equation where the independent variable is located in the exponent.
- Equation has the following form: $y = a \cdot b^x$
- Graph has a Horizontal Asymptote.

The following table represents an exponential function.

Write a $y = a \cdot b^x$ equation to model this data.

X	Y
2	24
4	216
7	5832
9	52488

Substitute the 1st two data points into the equation to create a system of equations.

$24 = a \cdot b^2$ → $a = \frac{24}{b^2}$

$216 = a \cdot b^4$

solve first equation for a then subsitute into the second equation

$216 = \frac{24}{b^2} \cdot b^4$ solve this equation for b

substitute this value of b into the 1st equation and solve for a.

$24 = a \cdot b^2$

$24 = a \cdot 3^2$

$24 = 9a$

$\frac{24}{9} = a$

$\frac{216}{24} = \frac{24b^2}{24}$

$\sqrt{9} = \sqrt{b^2}$ → $b = \pm 3 = 3$

$y = \frac{24}{9} \cdot 3^x$

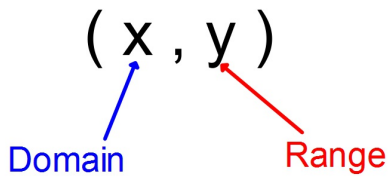
Domain and Range:

Domain

- All possible x-values for which the function is defined.
- Input.
- Independent Variable.

Range:

- All possible y-values for which the function is defined.
- Output.
- Dependent Variable.



When stating Domain and Range you should always give answers in Numerical Order **without** repeating.

State the domain and range of the relation given below.

(6,1) (-7,4) (2,9) (6, 3)

Domain:

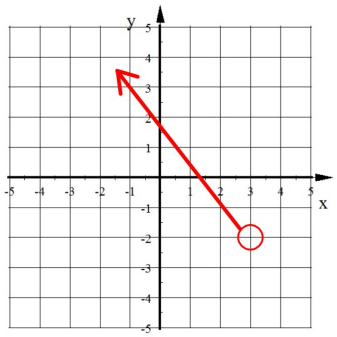
-7, 2, 6

Range:

1, 3, 4, 9

When there is a finite number of points you can list the individual values.

State the domain and range of the graph shown.



Domain: $x < 3$

Range: $y > -2$

When there is an infinite number of values, such as the graph at the left, you can't simply list them all. This means you will probably have to use INEQUALITIES.

Hwk #2: Due Tuesday

Practice Sheet - Sequences
Linear and Exponential Functions
Domain and Range