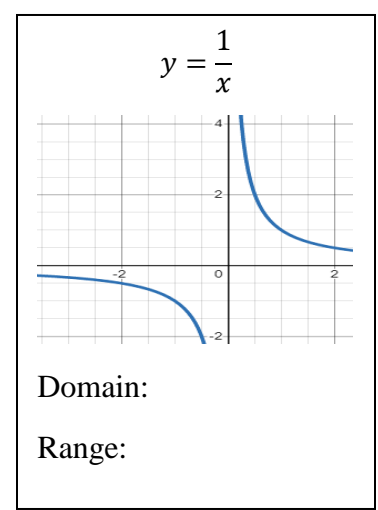
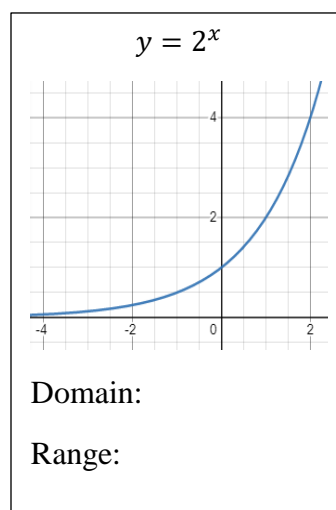
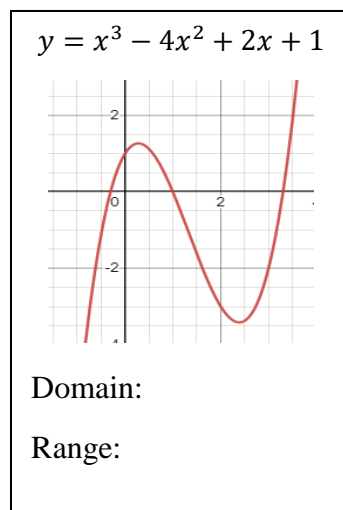
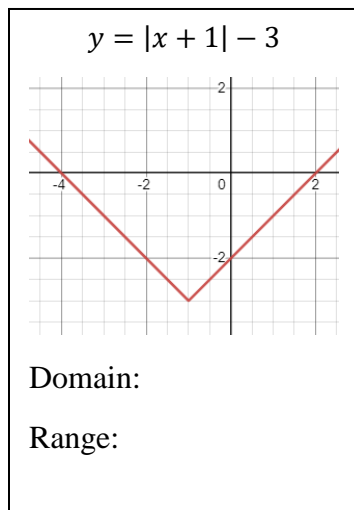


Lesson 1.4 -Functions: Domain, Range, Piecewise Functions and Applications

<p>Domain –</p> <p>Range –</p>	<p style="text-align: center;"><u>Rational Functions</u> <u>Square Root Functions</u></p>
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1. Find the domain and range of the following graphed functions.



I. Domain and Range

Algebraically find the domain for the functions below.

1. $f(x) = \sqrt{x + 3}$

2. $f(x) = \frac{3x}{x+4}$

3. $f(x) = -2x + 1$

4. $f(x) = \frac{\sqrt{x-2}}{x+1}$

5. $f(x) = \frac{10}{2x}$

6. $f(x) = \sqrt{x^2 - 9}$

II. Piecewise Functions

Complete each table then graph the piecewise function.

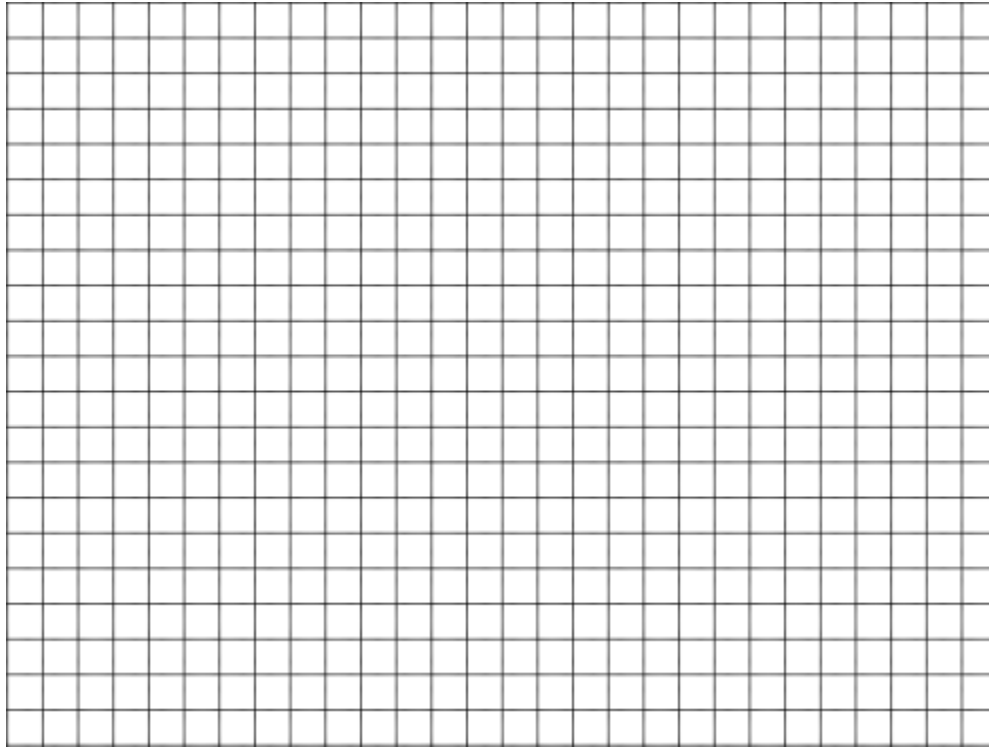
7. $f(x) = \begin{cases} x^2 + 1, & x \leq 1 \\ 2x, & x > 1 \end{cases}$

x	-1	0	1	2	3	4	5
f(x)							



8. $f(x) = \begin{cases} \frac{1}{x}, & x \leq -1 \\ x^2 - 2, & x > -1 \end{cases}$

x	-4	-3	-2	-1	0	1	2
f(x)							



III. Applications

9. The amount d (in billions of dollars) spent on prescription drugs in the United States from 1991 to 2002 can be approximated by the model

$$d(t) = \begin{cases} 5.0t + 37, & 1 \leq t \leq 7 \\ 18.7t - 64, & 8 \leq t \leq 12 \end{cases}$$

Where t represents the year, with $t = 1$ corresponding to 1991. Use this model to find the amount spent on prescription drugs in the year 1995 and the year 2001.

10. An open box of maximum volume is to be made from a square piece of material 24 centimeters on a side by cutting equal squares from the corners and turning up the sides. If V is a function of x , write the function and determine its domain.

(See my Notability drawing below if the words above don't make any sense).