Ch. 7 Jeopardy

Rational, Root, and Step Functions	Power Functions	Piecewise and Greatest Integer Functions	Solving Rational and Step Functions	Review - Solving Radical Equations
10	10	10	10	10
20	20	20	20	20
30	30	30	30	30
40	40	40	40	40
50	50	50	50	50

Find the domain, range, and vertical and horizontal asymptotes.

$$f(x) = \frac{-8}{x-2}$$

$D: (-\infty, 2) \cup (2, \infty)$

$R: (-\infty, 0) \cup (0, \infty)$

$VA: x = 2$

$HA: y = 0$

Find the domain, range, and
Tell how it was changed from the parent graph.

$$f(x) = \sqrt{x+4} + 2$$

$D: [-4, \infty)$

$R: [2, \infty)$

Translated left 4, up 2

Find the domain, range, and
Tell how it was changed from the parent graph.

$$f(x) = -\sqrt[3]{x-5} - 4$$

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

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

Right 5, down 4, reflection over x-axis

Find the domain, range, and
Tell how it was changed from the parent graph.

$$f(x) = 3[x+2]-1$$

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

$R:$ Integers multiples of 3

Steps have a height of 3 and start at (-2, -1)

Put the function in a form easier to graph.
Then, find the domain, range, and
Tell how it was changed from the parent graph.

$$f(x) = -\sqrt{25x - 100} + 6$$

$y = -5\sqrt{x-4} + 6$

$D: [4, \infty)$

$R: (-\infty, 6]$

Reflected over x-axis, right 4,

up 6, and stretched by 5 vertically

Is the following a direct or inverse variation? Write the equation for the variation.

X	Y
2	4
4	8
10	20
12.5	25

Direct

$y = 2x$

Does the data show direct or inverse variation? Use this information to find the missing value.

x	**0.5**	**-0.5**	**20**	**-1**
y	**10**	**-10**	**?**	**-5**

Inverse

$$y = \frac{5}{x}, \ so \ y = \frac{1}{4}$$

In kick boxing, it is found that the force, *f*, needed to break a board, varies **inversely** with the length, *l*, of the board. If it takes 5 lbs of pressure to break a board 3 feet long, how many pounds of pressure will it take to break a board that is 12 feet long? (Round to the nearest hundredth if necessary.)

$$(5,3) \text{ and } (x,12)$$

$$5(3) = 12x$$

$$x = \frac{5}{4} = 1.25$$

$$OR \text{ use } y = \frac{k}{x} \text{ method}$$

Find x when y = 5, if y varies inversely as x and x = 6 when y = -18

$$y = \frac{k}{x} \qquad y = \frac{-108}{x}$$

$$-18 = \frac{k}{6} \qquad 5 = \frac{-108}{x}$$

$$k = -108 \qquad x = -21.6$$

OR use $x_1 y_1 = x_2 y_2$

Scientists have concluded that the pulse rate of mammals is a power function of their body weight. Find the power function to model the following data. Then use the model to predict the pulse rate for a 450 kg horse.

Mammal	Body Weight (kg)	Pulse Rate (beats/min)
Rat	0.2	420
Guinea Pig	0.3	300
Rabbit	2	205
Small Dog	5	120
Large Dog	30	85
Sheep	50	70
Human	70	72

$$y = 231.20x^{-.2969}$$

$$y = 231.20(450)^{-.2969}$$

$$= 37.7\,beats/\min$$

Evaluate f(-3), f(0), and f(5):

$$f(x)=\begin{cases}-\sqrt{x+4}+2, & x>-3\\ 5, & x\le -3\end{cases}$$

$f(-3)=5$

$f(0)=0$

$f(5)=-1$

Evaluate g(1.5), g(-2.7) and g(0) for

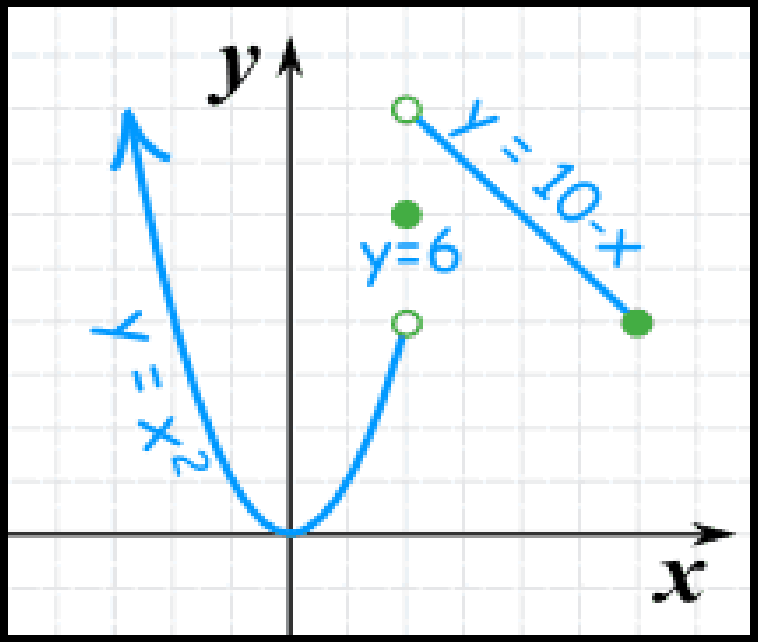
$$g(x) = \quad x \quad = [x]$$

$g(1.5) = 1$

$g(-2.7) = -3$

$g(0) = 0$

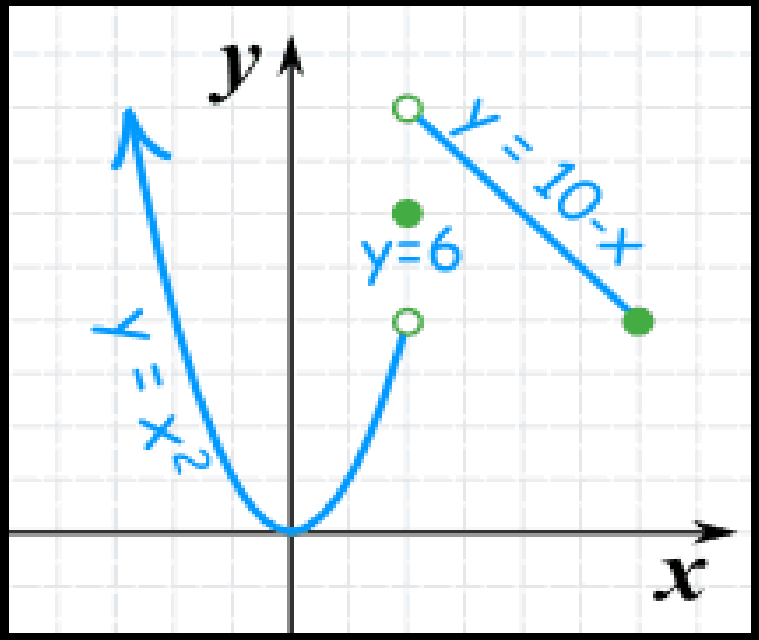
Identify the domain and range of the piecewise function shown



$D: (-\infty, 6]$

$R: [0, \infty)$

Write a piecewise function for the graph shown



$$f(x) = \begin{cases} x^2 \text{ if } x < 2 \\ 6 \text{ if } x = 2 \\ 10 - x \text{ if } 2 < x \leq 6 \end{cases}$$

Evaluate f(x+3) – f(x) given:

$$f(x) = x^2 + 2$$

$$((x+3)^2 + 2) - (x^2 + 2)$$

$$((x+3)(x+3) + 2) - (x^2 + 2)$$

$$(x^2 + 6x + 11) - x^2 - 2$$

$$6x + 9$$

Solve

$$[4x-1]=5$$

$$[\frac{3}{2},\frac{7}{4})$$

Solve

$$\frac{k}{k+1}+\frac{k}{k-2}=2$$

$k=-4$

Solve:

$$2[3x-2]=14$$

$$[3,\frac{10}{3})$$

Solve:

$$\frac{1}{x-5} = \frac{x}{x^2-25}$$

No solution

($x = 5$ *is an Excluded Value*)

Solve:

$$\frac{7x+3}{x^2-8x+15}+\frac{3x}{x-5}=\frac{-1}{x-3}$$

$$x=-\frac{2}{3},1$$

Solve the equation. Check for any extraneous solutions.

$$\sqrt[3]{x} = -5$$

$x = -125$

Solve the equation. Check for any extraneous solutions.

$$\sqrt[3]{x+4} = \sqrt[3]{3x-10}$$

$x = 7$

Solve the equation. Check for any extraneous solutions.

$$x^{\frac{4}{3}} + 7 = 88$$

$x = 27$

Solve the equation. Check for any extraneous solutions.

$$\sqrt{2x} - \sqrt{x^2 - 24} = 0$$

$x = 6$

Solve the equation. Check for any extraneous solutions.

$$(x+5)^{\frac{1}{6}}+3=0$$

No Solution