

☆ **Sample Problem A**

Consider the graph of $g(x)$ and the graph of $h(x)$.

1. What is the domain of $g(x)$, and how do you know?
left, right
 $[-9, \infty)$

2. What is the range of $h(x)$, and how do you know?
 \mathbb{R} down: up forever

3. Fill in the each blank, and explain how you determined the solution.
 $2h(3) = \underline{10}$ Reasoning: $h(3)$ is 5
 $h(3)$ is 5
 $\frac{1}{2}$ when $x=3$, $y=5$
 $g(\underline{\quad}) = 5$ Reasoning: $2 \cdot 5$
 undefined the range does not include 5

**Samples B and C are on the back! ©*

Oct 2-8:30 AM

☆ **Sample Problem B**

Consider $f(x) = 4x - 7$ (not pictured) and $h(x)$, pictured to the right.

1. Compare and contrast the domain and range of $f(x)$ and $h(x)$.
 Same domain (\mathbb{R})
 range $f(x): \mathbb{R}$
 $h(x): (-\infty, 3]$
 bottom, top

2. Student A claims that $f(0) = h(0)$, but student B claims that $f(-1) = -h(1)$. Who do you agree with, and why?
 $f(x) = 4x - 7$
 $f(0) = 4(0) - 7$
 $f(0) = -7$
 $h(0)$ look where $x=0$, the output is -7
 Agree with Student A
 Student B is wrong
 $f(-1) = 4(-1) - 7 = -11$
 $-h(1) = -(4(1) - 7) = -(-3) = 3$
 $-11 \neq 3$

Oct 2-8:31 AM

☆ **Sample Problem B**

Consider $f(x) = 4x - 7$ (not pictured) and $h(x)$, pictured to the right.

1. Compare and contrast the domain and range of $f(x)$ and $h(x)$.

2. Student A claims that $f(0) = h(0)$, but student B claims that $f(-1) = -h(1)$. Who do you agree with, and why?

☆ **Sample Problem C**

1. Sketch a graph of any function, $m(x)$ such that the following conditions are met:
 *Articulate the thought process behind each of your choices.
 $m(3) = -2$
 $m(8) = 0$
 the domain is $[-2, 10]$
 $x = -2$ is the leftmost
 $x = 10$ is the rightmost
 the range is $[-4, 9]$
 cannot go lower than -4
 or higher than 9 but must reach them
 12 is too high out of the range
 -8 is too far left of the range

Oct 2-8:31 AM

☆ **Sample Problem C**

1. Sketch a graph of any function, $m(x)$ such that the following conditions are met:
 *Articulate the thought process behind each of your choices.
 $m(3) = -2$
 $m(8) = 0$
 the domain is $[-2, 10]$
 $x = -2$ is the leftmost
 $x = 10$ is the rightmost
 the range is $[-4, 9]$
 cannot go lower than -4
 or higher than 9 but must reach them
 12 is too high out of the range
 -8 is too far left of the range

Oct 2-8:31 AM