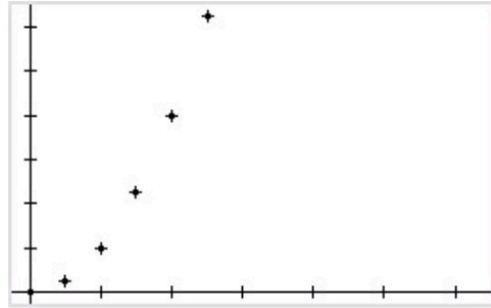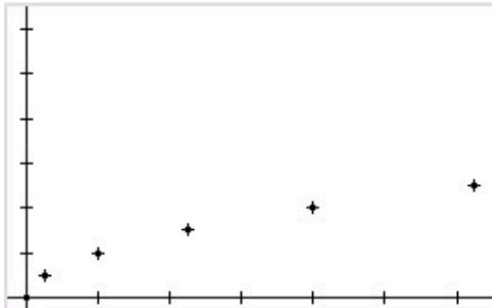Assignment 1.2

1.   Explain how both of the given graphs can be correct even though they look very different.
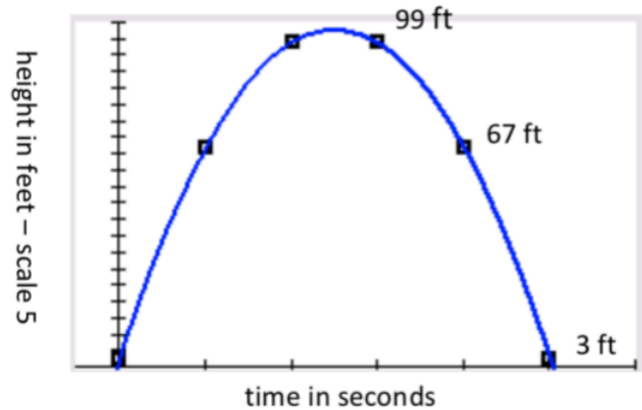

      Answers will vary but must include that inputs and outputs are swapped.

2.   Describe the transformations that would change the first graph into the second one.

      Reflection over the line $y = x$

3.   A baseball is hit upward from a height of 3 feet with an initial velocity of 80 ft/sec. The graph shows the height of the ball for each second of it's flight.

      a.   What is the approximate maximum height?
                  $\approx 102\ feet$

      b.   Approximate when the ball will hit the ground.
                  $\approx 5\ seconds$

      c.   At what time is the ball 67 feet above the ground?
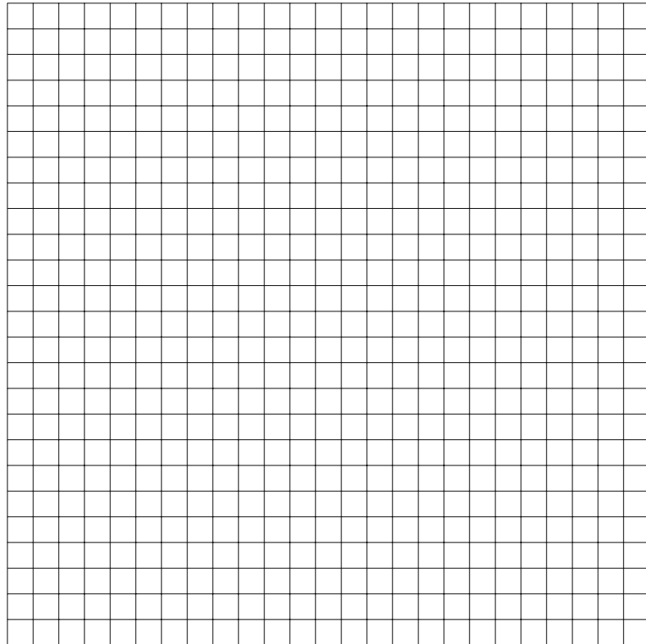 $\approx at\ 1\ and\ 4\ seconds$

4. Graph the inverse of the function from #3.

Will have the points:

(3, 0)
(67, 1)
(99, 2)
(99, 3)
(67, 4)
(3, 5)

Time in seconds

Is the inverse a function?
Why?

No, fails the vertical line test

Height in feet (5 feet per mark)

Refresh Your Memory

Use the given functions to calculate or simplify using the given values.

$f(x) = 3x$ $\qquad$ $g(x) = 10x + 4$ $\qquad$ $h(x) = x^2 - x$

5. a. $f(-9)$ $\qquad$ b. $f(s - t)$

$f(-9) = -27$ $\qquad$ $f(s - t) = 3s - 3t$

c. $g(-9)$ $\qquad$ d. $h(s - t)$

$g(-9) = -86$ $\qquad$ $h(s - t) = s^2 - 2st + t^2 - s + t$

6. The notation $f(g(x))$ means you replace x in $f(x)$ with the equation from $g(x)$ and simplify.

a. $f(g(x))$ $\qquad$ b. $f(h(x))$

$f\big(g(x)\big) = 30x + 12$ $\qquad$ $f\big(h(x)\big) = 3x^2 - 3x$