Graphs of Functions & Their Inverses

While working in a group make sure you:

- Expect to make mistakes but be sure to reflect/learn from them!
- Are civil and are aware of your impact on others.
- Assume and engage with the strongest argument while assuming best intent.

1. Given a tube partway filled with liquid will have a height dependent on the temperature. That is, we have height h (in cm) as a function of Temperature T (in F).

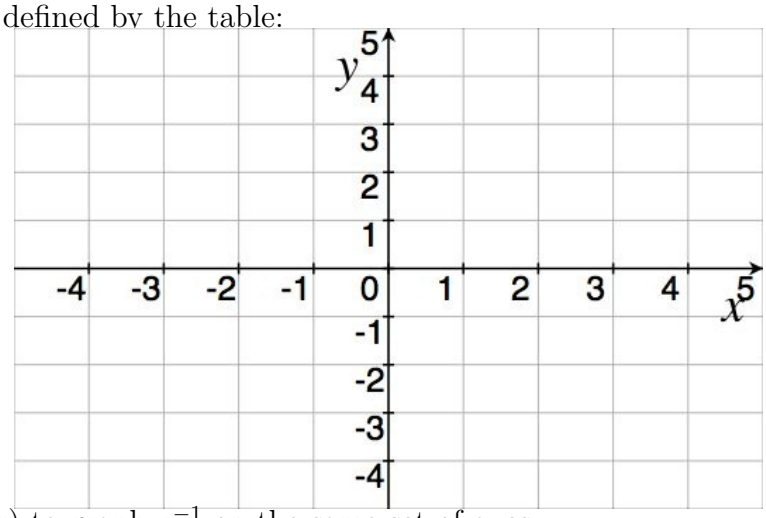
   (a) What does $h(32) = 1$ mean in physical terms?

   (b) What does $h(212) = 10$ mean in physical terms?

   (c) Describe the inverse function h^{-1}. What are the inputs? Outputs? Is there a device that we have that performs this in real life?

2. Let m be the function completely defined by the table:

$\star$	$q(\star)$	$\star$	$q^{-1}(\star)$
$\frac{3}{2}$	2	$\sqrt{2}$	
π	$\sqrt{2}$	2	



   (a) Complete the table above to define q^{-1}.

   (b) Plot the graph of q on the set of axes provided.

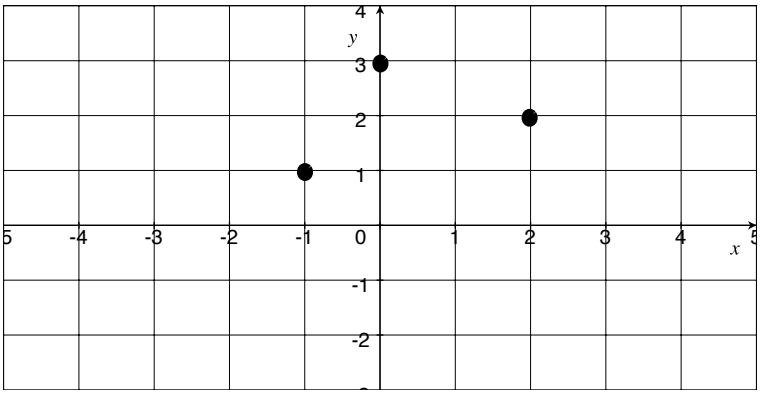
   (c) Use a different mark (or color) to graph q^{-1} on the same set of axes.

   (d) Notice the point $(\frac{3}{2}, 2)$ is on the graph of q and $(2, \frac{3}{2})$ is on the graph of q^{-1}.

   (e) Find the domain of q and range of q^{-1}. Are there any similarities?

The observations you made in (e) & (f) are true in general, that is:
if f is the inverse of g then: Domain of f=Range of g Range of f=Domain of g

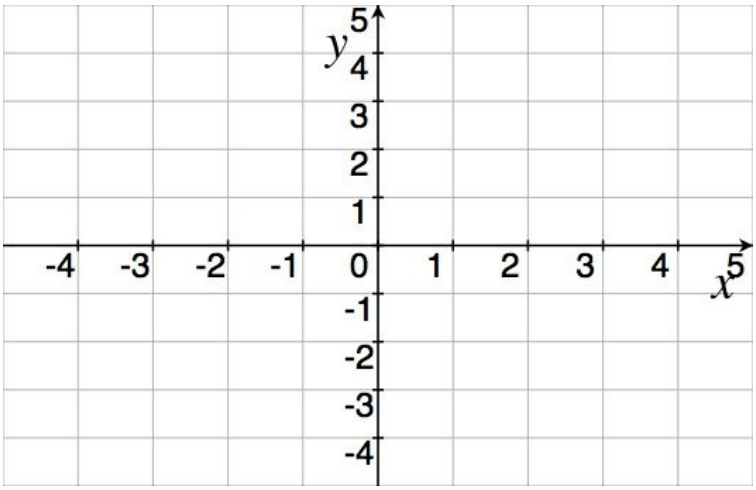
3. Let n be the function defined by the following graph:



(a) Will n have an inverse? Why?

(b) Use the observations from #2d to graph n^{-1}.

4. Let p be the function defined by $p(x) = x^2 - 1$.



(a) Draw the graph of p.

(b) Will p have an inverse? Why?

(c) What might we do to try and build something "kind of like an inverse"?