

Algebra 2 Topic 1 Review

1. You have given the directions below to help a new student get from class to the front office.

- From doorway cross hall to stairway.
- Go up the stairs and turn right at the top of the stairs.
- Walk to the first right in the hallway and make a right.
- Walk to the end of this hallway and make a right.
- The main office is the first doorway on the right.

What are the directions the new student must take to return from the main office

following the same route? From door turn left. Walk to the 1st left in the hall & turn left. At the next hall way turn left. At the 1st stairwell on the left, enter the stairwell and go down stairs. Cross the hall when leaving the stairs to enter the class.

2. Using the verbal descriptions below, write the original function and its inverse.

Explain your solution strategy.

- a. • starting with a number, take the square root
• add 15 to the result
• divide the quantity by 4

$$f(x) = \frac{\sqrt{x} + 15}{4}$$

To find inverse, mult. by 4, then sub. 15, finally, take the square root the qty.

$$f^{-1}(x) = (4x - 15)^2$$

- b. • starting with a number, increase it by five
• double the result
• take the cube root of the quantity
• subtract 7

$$f(x) = \sqrt[3]{2(x+5)} - 7$$

For inverse, add 7, cube the qty,

$$f^{-1}(x) = \frac{(x+7)^3}{2} - 5$$

divide that by 2, then sub. 5.

3. Determine the inverse relation for each function. Explain how you determined your answer.

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

Add 4, then mult. the gty by 3 and divide that by 2.

$$f^{-1}(x) = \frac{3(x+4)}{2}$$

b. $g(x) = 3\sqrt{x-2}$

Div. by 3, then square the gty. Finally, add 2.

$$g^{-1}(x) = \left(\frac{x}{3}\right)^2 + 2$$

c. $h(x) = 4x^3 + 5$

Subt. 5, then div. gty by 4. Finally, take cube root of the whole thing.

$$h^{-1}(x) = \sqrt[3]{\frac{x-5}{4}}$$

d. $k(x) = \{(3, -2), (5, 3), (-1, 7), (16, -3), (5, 2), (0, 1), (4, 7), (3, 8), (-11, 2)\}$

$$k^{-1}(x) = \{(-2, 3), (3, 5), (7, -1), (-3, 16), (2, 5), (1, 0), (7, 4), (8, 3), (2, -11)\}$$

switch each input & output value.

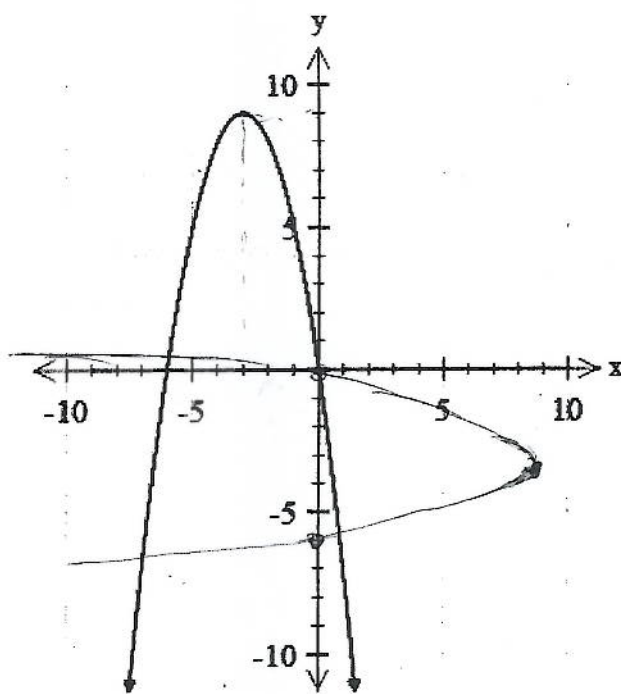
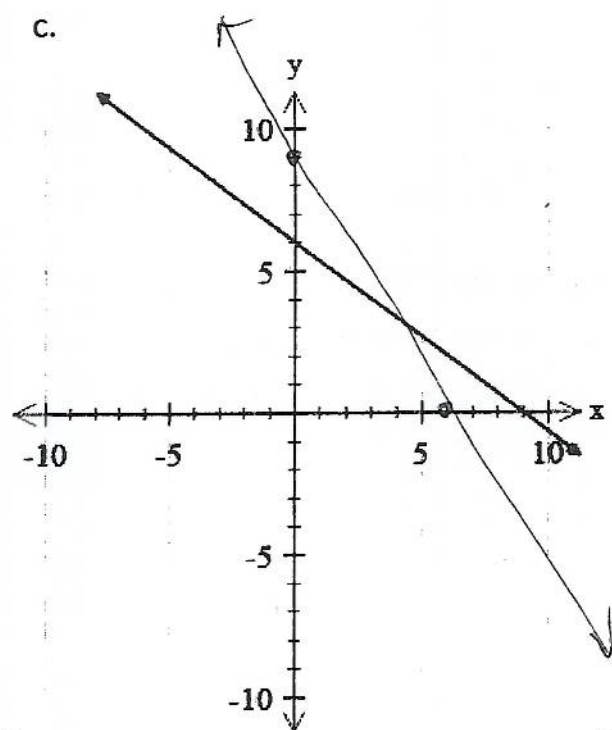
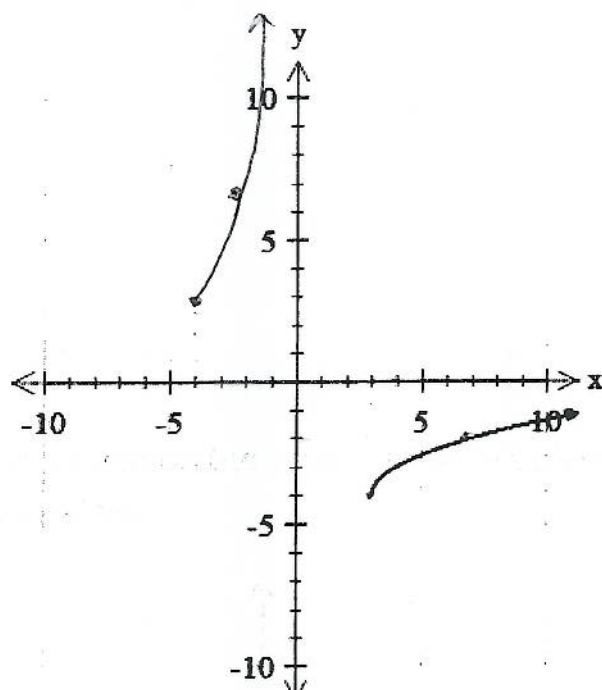
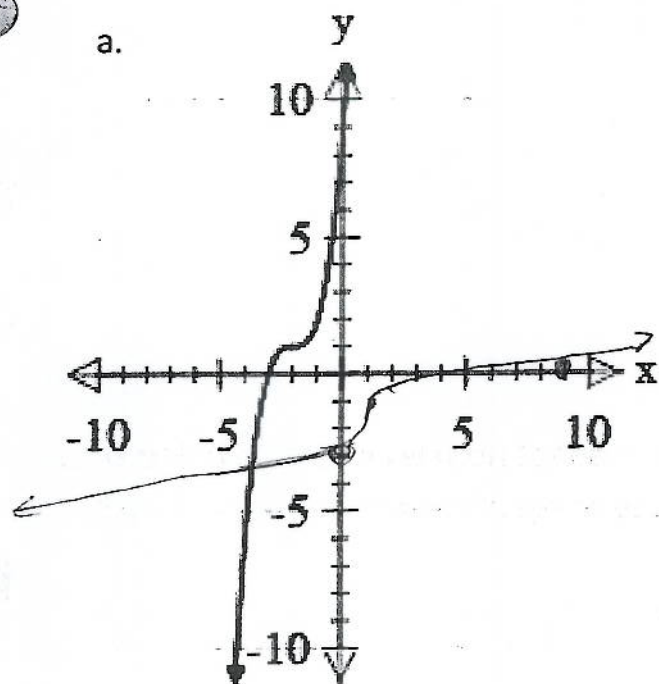
e.

x	-3	-2	-1	0	1	2
m(x)	11	9	7	5	3	1

x	11	9	7	5	3	1
m ⁻¹ (x)	-3	-2	-1	0	1	2

switch each input & output value.

4. Graph the inverse relation for each given function on the same coordinate plane.
Explain your process in the space provided below.



Process to graph an inverse relation: I found several points on each graph and then I switched the inputs & outputs. Connecting the new points I plotted gave me the inverse.

5. Xavier hired a plumber who charges a flat fee of \$50 and a labor rate of \$72 per hour to service plumbing.

a. Write a function to help Xavier determine the cost of hiring the plumber.

$$C(h) = 50 + 72h$$

- b. Xavier lost his bill, but knows what he paid for the service repair. Write a function that will help Xavier determine the number of hours the plumber took to complete the repair.

$$h(C) = \frac{C - 50}{72}$$

- c. Xavier's bill was \$950. How many hours did the plumbers take to complete the service? Explain your solution, including the function used to determine your answer.

$$h(950) = \frac{950 - 50}{72} = \frac{900}{72} = 12.5$$

It took 12.5 hours.

Replace the total cost in the inverse eq. with 950 and solve for # hours.

- d. How could you use the original function to check your solution? Why does this work?

Replace the # hours in the original eq with 12.5 and calculate the total cost. See if that matches the \$950 Xavier paid.