Algebra 1 4.7
Find the inverse of a relation
Find the inverse of a linear function

relation inverse function domain range whiteboards

relation $(3, 5) \rightarrow (5, 3)$ $(-2, 6) \rightarrow (6, -2)$ $(-2, 6) \rightarrow (6, -2)$

Find the inverse of each function.

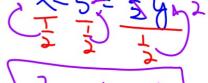
$$14(f(x)) = 25 + 4x$$

16.
$$f(x) = 4(x + 17)$$

$$\frac{1}{2}$$

$$\frac{1}{2}$$

Distributive property first? (might be easier)



$$f(x) = 2(x-6)$$

$$y = \frac{1}{3}x + 5$$

$$y = 4x - 6$$

$$x = \frac{1}{3}y + 5$$

$$-\frac{1}{3}y + \frac{1}{3}y - 6$$

$$x = 4y - 6$$

$$x = 4y - 6$$

$$-4y - 4y - 6$$

$$-\frac{1}{3}y + x = x$$

$$y = 3x + 15$$

$$-\frac{1}{3}y = \frac{1}{3}x + 5$$

$$y = 3x + 15$$

$$-\frac{1}{3}y = \frac{1}{3}x + 5$$

$$y = \frac{1}{3}x + \frac{1}$$

y = cost C(x)

DOWNLOADS An online music subscription service allows members to download songs for \$0.99 each after paying a monthly service charge of \$3.99. The total monthly cost C(x) of the service in dollars is C(x) = 3.99 + 0.99x, where x is the number of songs downloaded.

- a. Find the inverse function.
- **b.** What do x and $C^{-1}(x)$ represent in the context of the inverse function?
- c. How many songs were downloaded if a member's monthly bill is \$27.75?

cost is a function of # of songs # songs is a function of cost

y = cost C(x)

- **21. LANDSCAPING** At the start of the mowing season, Chuck collects a one-time maintenance fee of \$10 from his customers. He charges the Fosters \$35 for each cut. The total amount collected from the Fosters in dollars for the season is C(x) = 10 + 35x, where x is the number of times Chuck mows the Fosters' lawn.
 - a. Find the inverse function.
 - **b.** What do x and $C^{-1}(x)$ represent in the context of the inverse function?
 - w. How many times did Chuck mow the Fosters' lawn if he collected a total of \$780 from them?

Cost is a function of number of times mowed # of times mowed is a function of cost

