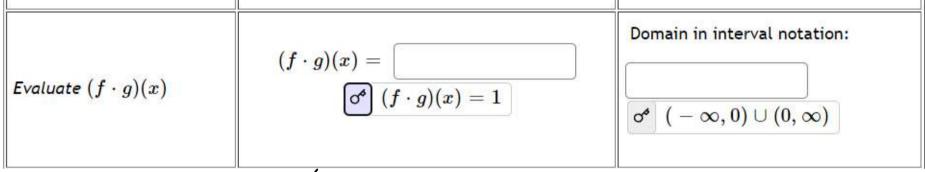


$$f(x) + g(x) = \frac{x}{2} + \frac{2}{x} = \frac{x}{2} \cdot \frac{x}{x} + \frac{2}{x} \cdot \frac{2}{2} = \frac{x^2}{2x} + \frac{4}{2x} = \frac{x^2 + 4}{2x}$$
 no division by 0, so exclude 0

any other value of x is allowed.

$$(f-g)(x) = f(x) - g(x) = \frac{x}{2} - \frac{2}{x} = \frac{x}{2} \cdot \frac{x}{x} - \frac{2}{x} \cdot \frac{2}{2} = \frac{x^2}{2x} - \frac{4}{2x} = \frac{x^2 - 4}{2x}$$
 exclude 0 since that would lead to division by 0.



 $f(x)g(x) = (f \cdot g)(x) = \frac{x}{2} = 1$  This is valid as long as  $x \neq 0$ , so exclude 0.

When x=0, we have  $\frac{0}{2} \cdot \frac{2}{0} = 0 \cdot \frac{2}{0}$  which is not defined since 0 is in the bottom. So exclude 0 from domain.

$$\frac{f(x)}{g(x)} = \left(\frac{f}{g}\right)(x) = \frac{\frac{x}{2}}{\frac{2}{x}} = \text{keep change flip} = \frac{x}{2} \cdot \frac{x}{2} = \frac{x^2}{4} \text{ exclude } 0 \text{ b/c it doesn't work}$$

in the unsimplified expression we get  $\frac{2}{2}$  This is not valid because there is 0 in the  $\frac{1}{0}$  denominator of 2/0.

A store has a 30 % sale on all items (x). For customers with a discount card, the store takes off an additional 30 % at the cash register. Write a price function S(x) that computes the final price of the item in terms of the original price x. (Hint: Use function composition to find your answer. The function is in terms of amount paid NOT amount of discount.)

$$(S)(x) =$$
  $0.49x$ 

Question Help: D Video 30% off means take 70% of the original price to get 0.7 x (S)(X) = S(X)At the cashier, 30% off again means take 70% of the 0.7 x from above. So we get  $S(x) = 0.7(0.7 x) = 0.7 \cdot 0.7 x = 0.49 x$ 

## Prev Next 1 checked 0 remaining

Mark Question for Use

Left of 4, use 
$$x=0$$
:  
 $-0^2 + 11 \cdot 0 - 28 \ge 0$   
 $-28 \ge 0$  is false  
Between 4 and 7  
use  $x=5$ :  
 $-5^2 + 11(5) - 28 \ge 0$   
 $-25 + 55 - 28 \ge 0$   
 $2 \ge 0$  is true  
Right of  $x=7$ , use  $x=8$ :  
 $-8^2 + 11 \cdot 8 - 28 \ge 0$   
 $-64 + 88 - 28 \ge 0$   
 $-64 - 28 + 88 \ge 0$   
 $-92 + 88 \ge 0$   
 $-4 \ge 0$  is false

$$f \circ g = f(g(x))$$

$$= \sqrt{-28 - [x^2 - 11x]}$$

$$= \sqrt{-28 - x^2 + 11x}$$

$$= \sqrt{-x^2 + 11x - 28}$$

domain must be such that  $-x^2 + 11x - 28 \ge 0$  divide by -1:  $x^2 - 11x + 28 \le 0$  (flip all signs)  $(x-7)(x-4) \le 0$  factor set factors to 0 and check where the inequality is mad true.

So the appropriate interval is [4, 7] in interval notation.