

Name _____

Date _____

Advanced Algebra

Unit 2: Families of Functions

Composition of functions- Good for notes!

Assignment #16

Key point: IF it is 10% off, then I pay 90%... goal concept from Unit 1.

1) A clothing store is having a sale in which you can take \$50 off the cost of any coat in the store. The store also offers 10% off your entire purchase.

Let x = price of coat

a) Show the price taking the \$50 off first and then taking the 10% off.

$$.9(x - 50) = \boxed{.9x - 45}$$

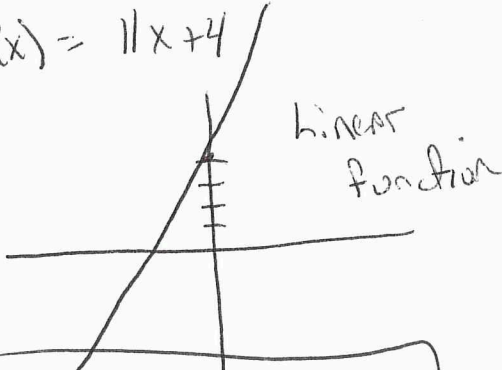
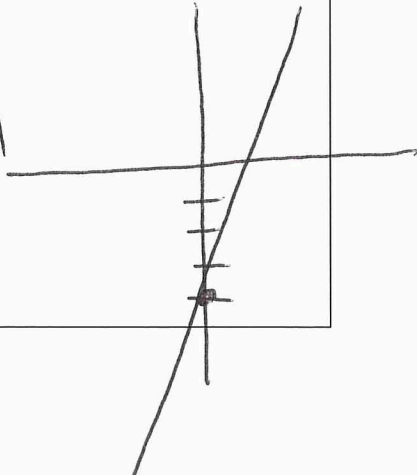
b) Show the price taking the 10% off first and then taking the \$50 off.

$$\boxed{.9x - 50}$$

Why doesn't the store apply the 10% discount before subtracting the \$50?

Because then you are paying less

Let $f(x) = 10x$ and $g(x) = x + 4$. For the following, write and simplify an expression for $h(x)$. State the domain and the range of the new function $h(x)$.

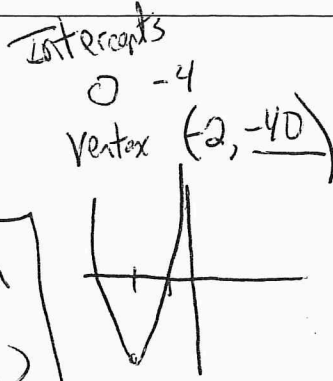
<p>1) $h(x) = f(x) + g(x)$</p> $10x + x + 4$ $h(x) = 11x + 4$  <p>Domain: All Real Range: All Real</p>	<p>2) $f(x) - g(x)$</p> $10x - (x + 4)$ $10x - x - 4$ $\boxed{9x - 4}$ Linear Domain: All Real Range: All Real
	

3) $f(x) * g(x)$

$$10x(x+4)$$

$$y = 10x^2 + 40x$$

Domain: All Real
Range: $y \geq -40$

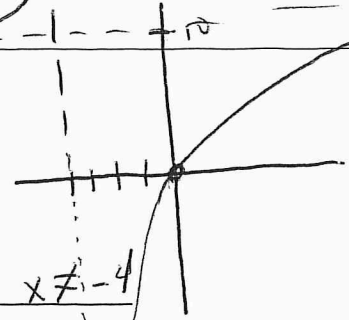


4) $\frac{f(x)}{g(x)}$

$$\frac{10x}{x+4}$$

Domain: All Real $x \neq -4$

Range: All Real $y \neq 10$



Rational function

5) $f(g(x))$

$$f(x+4)$$

$$10(x+4)$$

$$10x+40$$

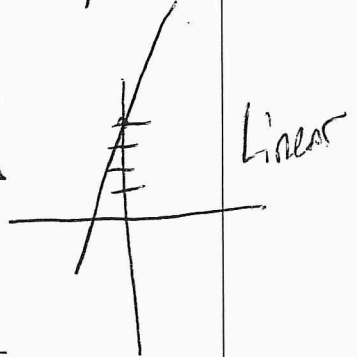
6) $g(f(x))$

$$g(10x)$$

$$10x+4$$

Domain: All Real

Range: All Real



7) $f(f(x))$

$$f(10x)$$

$$10(10x)$$

$$100x$$

Domain: All Real
Range: All Real

Linear

8) $g(g(x))$

$$g(x+4)$$

$$x+4+4$$

$$x+8$$

Domain: All Real

Range: All Real

Linear

Remember from the other side that ...

Let $f(x) = 10x$ and $g(x) = x+4$. Find the following. State the domain and the range of the new function.

