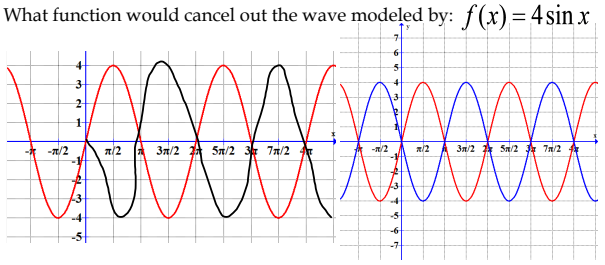
## Adding & Subtracting (10.1)

p483 day 1

ex1: Noise-canceling headphones are designed to erase ambient noise by producing a sound wave to nullify the wave produced by the extra noise.

What function would cancel out the wave modeled by: $f(x) = 4\sin x$



## Adding & Subtracting (10.1)

p483 day 1

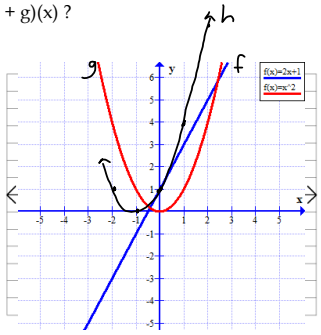
ex2: Let f(x)=2x + 1 and g(x)=$x^2$ .

What is the equation of h(x)=(f + g)(x) ?

$h(x) = 2x+1 + x^2$

$x^2+2x+1$

Sketch a graph of *f*, *g*, and *h*.




## Adding & Subtracting (10.1)

p483 day 1

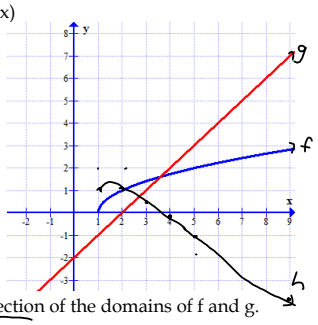
ex3: Let $f(x) = \sqrt{x-1}$, g(x)=x - 2

Write an equation for h(x)=(f - g)(x)

$h(x) = \sqrt{x-1} - (x-2)$

$h(x) = \sqrt{x-1} - x + 2$

Sketch a graph of *f*, *g*, *h*.




What is the domain of h(x)?

$[1, \infty)$

What is the range of h(x)?

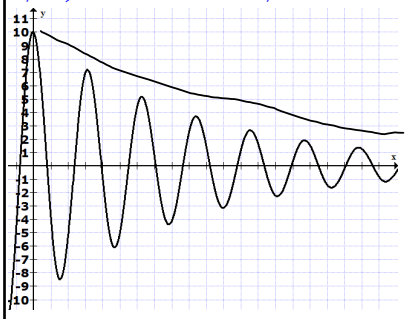
$(-\infty, 1.3]$

The domain of h(x) is the intersection of the domains of f and g.

## Products & Quotients (10.2)

p496 day 2

*Sound waves are represented by sine functions, but how do you get the wave to decay like a real sound wave?*

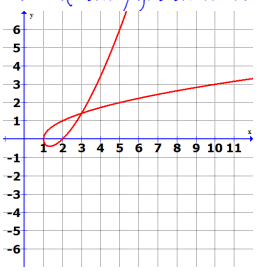


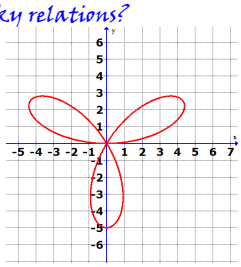
$y = 10\cos(2x)\cdot 0.9^x$

## Products & Quotients (10.2)

p496 day 2

*How do they get those really freaky relations?*





## Products & Quotients (10.2)

p496 day 2

ex4: Are these statements true or false?

a) If f={(2,4)} and g={(1,5)} then f+g={(3,9)}

(1,4)+(1,5) = (1,9)

False add when x is same

b) If f={(1,6), (9,5)} and g={(1,3), (9,0)}, then f/g={(1,2)}

(9,1)

True can't divide by zero ((1,2), (9,5)) (9,5)

c) If f={(1,6), (9,5)} and g={(1,3), (9,0)} then fg={(1,18), (9,0)}

True

d) If f(x)=x + 2 and g(x)=x - 3, then (fg)(5)=14

f(5) = 7 g(5) = 2 7·2 = 14

True

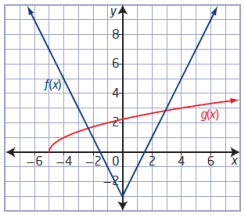
Adding & Subtracting (10.1)

p483 day 1

hw: p483#6, 7, 8ab (f+g), 9ac, 10ac
p496#2

6. Use the graphs of $f(x)$ and $g(x)$ to evaluate the following.

a) $(f+g)(4)$ b) $(f+g)(-4)$
c) $(f+g)(-5)$ d) $(f+g)(-6)$



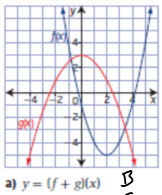

a) $f(4)+g(4) = 5+3$
$= 8$

b) $f(-4) = 5+1$
$= 6$

c) $(-5) = -7+0$
$= 7$

d) $\emptyset$

7. Use the graphs of $f(x)$ and $g(x)$ to determine which graph matches each combined function.



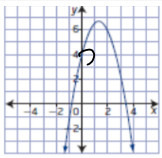

a) $y = (f+g)(x)$ B
b) $y = (f-g)(x)$ C
c) $y = (g-f)(x)$ A

a) $(-1) = 4.25 = 6.5$
$(0) = 7+1 = 7$
$(1) = 2.5+4 = 6.5$

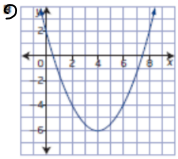
b) $f-g(0) = -1-3$
$= -4$
$(0,-4)$

c) $g-f(0) = 7--1$
$= 4$
$(0,4)$

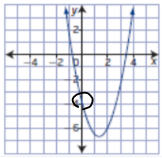
A



B



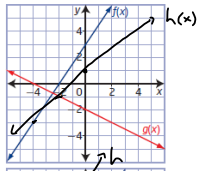
C



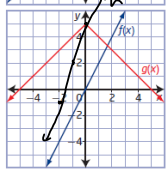
8. Copy each graph. Add the sketch of the graph of each combined function to the same set of axes.

f+g

a)




b)




i) $y = (f+g)(x)$
ii) $y = (f-g)(x)$
iii) $y = (g-f)(x)$

9ac

9. Given $f(x) = 3x^2 + 2$, $g(x) = 4x$, and $h(x) = 7x - 1$, determine each combined function.

a) $y = f(x) + g(x) + h(x)$
b) $y = f(x) + g(x) - h(x)$
c) $y = f(x) - g(x) + h(x)$
d) $y = f(x) - g(x) - h(x)$

9a) $= 3x^2+2+4x+7x-1$
$= 3x^2+11x+1$

9c) $= 3x^2+2-4x+7x-1$
$= 3x^2+3x+1$

10ac

10. If $h(x) = (f+g)(x)$ and $f(x) = 5x + 2$, determine $g(x)$.

a) $h(x) = x^2 + 5x + 2$
b) $h(x) = \sqrt{x+7} + 5x + 2$
c) $h(x) = 2x + 3$
d) $h(x) = 3x^2 + 4x - 2$

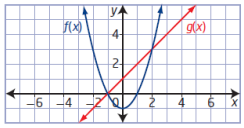
$h = f+g$
$g = h-f$

10a) $g(x) = x^2+5x+2-(5x+2)$
$= x^2$

c) $g(x) = 2x+3-(5x+2)$
$= 2x+3-5x-2$
$= -3x+1$

p496#2

**2.** Use the graphs of $f(x)$ and $g(x)$ to evaluate the following.




**a)** $(f \cdot g)(-2)$ **b)** $(f \cdot g)(1)$

**c)** $\left(\frac{f}{g}\right)(0)$ **d)** $\left(\frac{f}{g}\right)(1)$

a) $(7)(-1) = -3$

b) $(2)(0) = 0$

c) $\frac{-1}{1} = -1$

d) $\frac{0}{2} = 0$