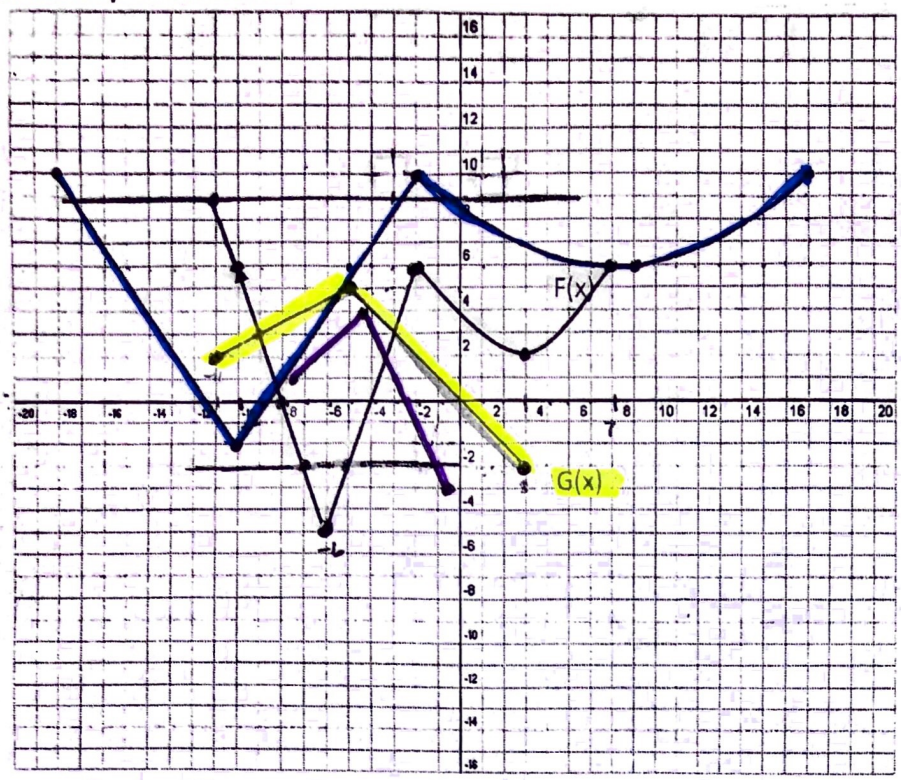
Unit 1 Day 2 Homework



1. **a.** F(−1) = 5 F(7) = 6

b. F(-11) =9 F(-5) and F(-7) = −3

c. State the domain and range of F(x) and G(x).

D: $\{x \mid x \leq 7\}$ D: $\{x \mid -11 \leq x \leq 3\}$

R: $\{y \mid y \geq -6\}$ R: $\{y \mid -3 \leq y \leq 5\}$

d. What are the x intercepts of F(x)? The y intercept?

(-4,0), (-8,0) ↳ (0,4)

e. When does F(x) = G(x)?

$x = -3$ and $x = -9$

f. For what values is F(x) ≤ 0?

$-8 \leq x \leq -4$

g. For what values is G(x) > 0?

$-11 \leq x < 0$

h. Graph $F(\frac{1}{2}x-1)+4$ on the coordinate plane above using F(x). List the transformation steps in the correct order below.

$F\left[\frac{1}{2}(x-2)\right]+4$

~ twice as wide/horiz. stretch by 2
~ right 2
~ up 4

i. Graph $G(2x+4)-1$ on the coordinate plane on side 1 using G(x). List the transformation steps in the correct order below.

$G[2(x+2)]-1$

~ half as wide/horiz. comp. by $\frac{1}{2}$
~ left 2
~ down 1

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2. List the steps needed in the correct order to graph the following.

a. $3f(\frac{1}{4}x-2)-4$ $3f\left[\frac{1}{4}(x-8)\right]-4$

3 times as tall
4 times as wide
Right 8
down 4

b. $\frac{1}{3}f(2x-8)+8$ $\frac{1}{3}f\left[2(x-4)\right]+8$

$\frac{1}{3}$ as tall
$\frac{1}{2}$ as wide
Right 4
up 8

c. $4f(-6-3x)$ $4f\left[-3(x+2)\right]$
$-3x-6$

4 times as tall
Reflects over y-axis
$\frac{1}{3}$ as wide
left 2

d. $-f(-x+7)$ $-f\left[-1(x-7)\right]$

Reflects over x-axis
Reflects over y-axis
Right 7

3. Without using a calculator, find the domain for the following.
Explain why you set the problem up the way you did.

$f(x)=\frac{x}{\sqrt{2x-6}}$ $\{x|x>3\}$

$g(x)=\frac{5}{x^2-4}$ $\{x|x\neq\pm2\}$

$q(x)=\sqrt{4x-8}$ $\{x|x\geq2\}$

4. Given the function $f(x)=-x^2+2x$ evaluate the following:

(a) $f(a)=-a^2+2a$

(b) $f(a+b)=-a^2-2ab-b^2+2a+2b$

(c) $f(a+b)-f(a)=-2ab-b^2+2b$

(d) $\frac{f(x+h)-f(x)}{h}=-2x-h+2$