

p100: 56

Create a table.

Use the graph of f to sketch each graph.

(a) $y = f(x - 5)$

(b) $y = -f(x) + 3$

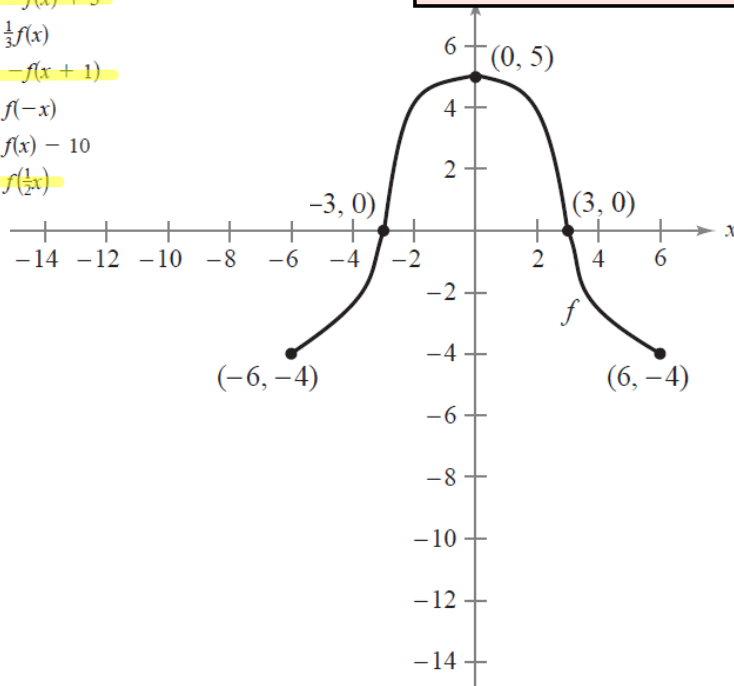
(c) $y = \frac{1}{3}f(x)$

(d) $y = -f(x + 1)$

(e) $y = f(-x)$

(f) $y = f(x) - 10$

(g) $y = f\left(\frac{1}{2}x\right)$



2 Corinthians 3:17-19

17 Now the Lord is the Spirit, and where the Spirit of the Lord is, there is freedom.

18 And we, who with unveiled faces all reflect the Lord's glory, are being **transformed** into his likeness with ever-increasing glory, which comes from the Lord, who is the Spirit.

Main Idea: Functions

Take notes on 1.4: p101-104

Essential questions for 1.4 Combination of Functions

What is a **combination function**?

How do you **find a value of a combination of a function** (algebraically and graphically)?

What is the **domain of a arithmetic combination**?

What is the **composition** of functions?

How do you **compose and decompose** two or more functions? (algebraically and graphically)

Combinations of Functions

p101:

1) Sum: $(f + g)(x) = f(x) + g(x)$

2) Difference: $(f - g)(x) = f(x) - g(x)$

3) Product: $(f * g)(x) = f(x) * g(x)$

4) Quotient: $(f/g)(x) = f(x) / g(x)$, where $g(x) \neq 0$

*Arithmetic combination domain consists of all real number common to the domains of the two functions being combined and in case of a quotient $f(x)/g(x)$; $g(x) \neq 0$.

Properties of Functions

Addition/Difference

$$f(x) = x^2 + 5x - 1$$

$$g(x) = x^3 - 2$$

What is $(f + g)(5)$?

What is $(g - f)(x)$?

Product/Quotient

$$f(x) = x^2 + 5x - 1$$

$$g(x) = x^3 - 2$$

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

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

Find $\frac{g}{f}(-3)$

Composite Functions

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

are like....



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They Have Layers.

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

A function inside another function...

Example:

$$h(x) = (f \circ g)(x) = f(g(x)) = \sqrt{x^2 + 3}$$

$$f(x) =$$

$$g(x) =$$

$$f(x) = x^2 + 5x - 1 \qquad g(x) = x^3 - 2$$

$$\textit{Find } (f \circ g)(x) = f(g(x))$$

$$\textit{Find } (g \circ f)(x) = g(f(x))$$

Composite Functions

Luke 1:67

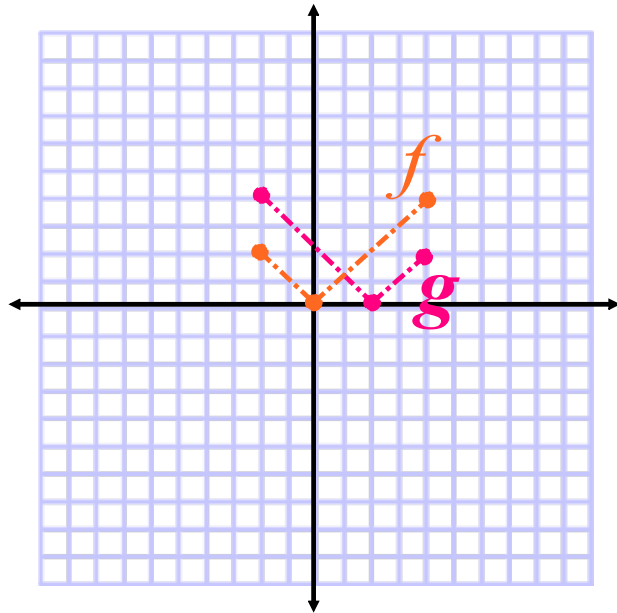
67His father Zechariah was filled with the Holy Spirit and prophesied:

Find

a) $(f + g)(4)$

b) $(g - f)(-2)$

c) $(f \circ g)(2)$



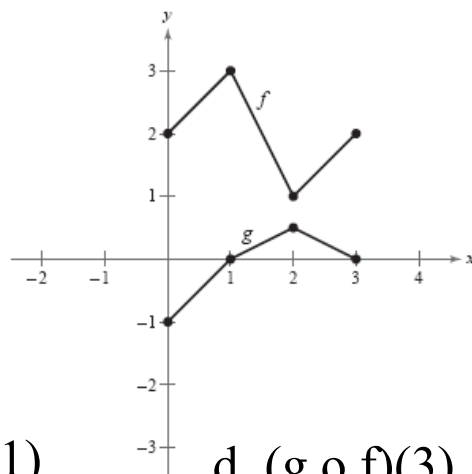
Find

a. $(f * g)(x)$

b. $(f/g)(2)$

c. $(g \circ g)(1)$

d. $(g \circ f)(3)$



You can use two methods to graph a function:

- a) Plotting points or
- b) Translating a common function

Which method would you use to sketch each graph? Explain.

a) $f(x) = -x^3 + 2x^2 + 4$

b) $g(x) = (x - 2)^3 + 6$

Learning Log...

At the end of today's notes, write on ...

- Combination of Functions
- Composite Functions

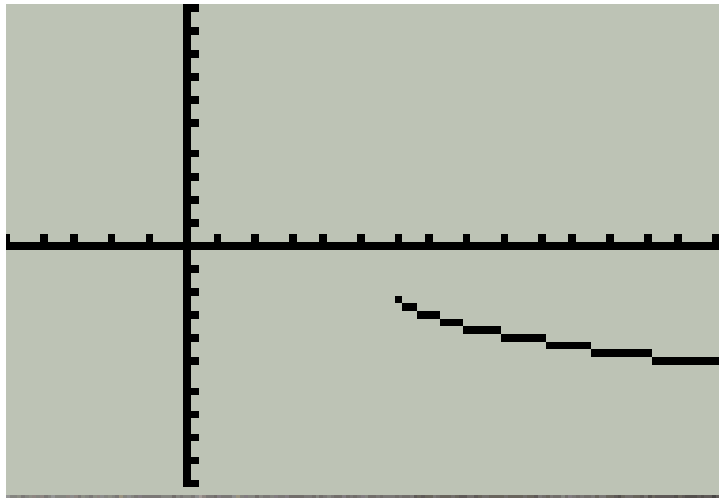
Quiz Thursday on Graphs of functions

Assignment: Do not put it on notes.

p100:57, 59-64all

p106:1-17odd

- 1) a) Identify the common function.
- b) Describe the sequence of transformations.
- c) Write an equation for the graph.



- 2) a) Identify the common function.
- b) Describe the sequence of transformations.
- c) Sketch the graph.

$$g(x) = -(x+3)^2 - 4$$