

## GOOD MORNING!!

Write your homework question on the side board and get started on the questions below.

For the Function  $f$  defined by  $f(x) = -4x^2 + 2x$ , Evaluate.

$$\begin{aligned} \text{(a) } f(3) &= -4(3)^2 + 2(3) \\ &= -36 + 6 = \boxed{-30} \end{aligned}$$

$$\begin{aligned} \text{(b) } f(-x) &= -4(-x)^2 + 2(-x) \\ &= \boxed{-4x^2 - 2x} \end{aligned}$$

$$\begin{aligned} \text{(c) } f(1) &= -4(1)^2 + 2(1) \\ &= -4 + 2 = \boxed{-2} \end{aligned}$$

PG. 68 #39 DUE TODAY...

pg. 68 #39

$$39) f(x) = 3x^2 + 2x - 4$$

$$\begin{aligned} \text{a) } f(0) &= 3(0)^2 + 2(0) - 4 \\ &= 3(0) + 2(0) - 4 \\ &= 0 + 0 - 4 \\ &= \boxed{-4} \end{aligned}$$

$$\begin{aligned} \text{b) } f(1) &= 3(1)^2 + 2(1) - 4 \\ &= 3(1) + 2(1) - 4 \\ &= 3 + 2 - 4 \\ &= 5 - 4 \\ &= \boxed{1} \end{aligned}$$

$$\begin{aligned} \text{c) } f(-1) &= 3(-1)^2 + 2(-1) - 4 \\ &= 3(1) + 2(-1) - 4 \\ &= 3 - 2 - 4 \\ &= 1 - 4 \\ &= -3 \end{aligned}$$

$$\begin{aligned} \text{d) } f(-x) &= 3(-x)^2 + 2(-x) - 4 \\ &= 3(x^2) + 2(-x) - 4 \\ &= 3x^2 - 2x - 4 \end{aligned}$$

$$\begin{aligned} \text{e) } -f(x) &= -(3x^2 + 2x - 4) \\ &= -3x^2 - 2x + 4 \end{aligned}$$

$$\begin{aligned} \text{f) } f(x+1) &= 3(x+1)^2 + 2(x+1) - 4 \\ &= 3(x^2 + 2x + 1) + 2(x+1) - 4 \\ &= 3x^2 + 6x + 3 + 2x + 2 - 4 \\ &= 3x^2 + 8x + 1 \end{aligned}$$

$$\begin{aligned} \text{g) } f(2x) &= 3(2x)^2 + 2(2x) - 4 \\ &= 3(4x^2) + 2(2x) - 4 \\ &= 12x^2 + 4x - 4 \end{aligned}$$

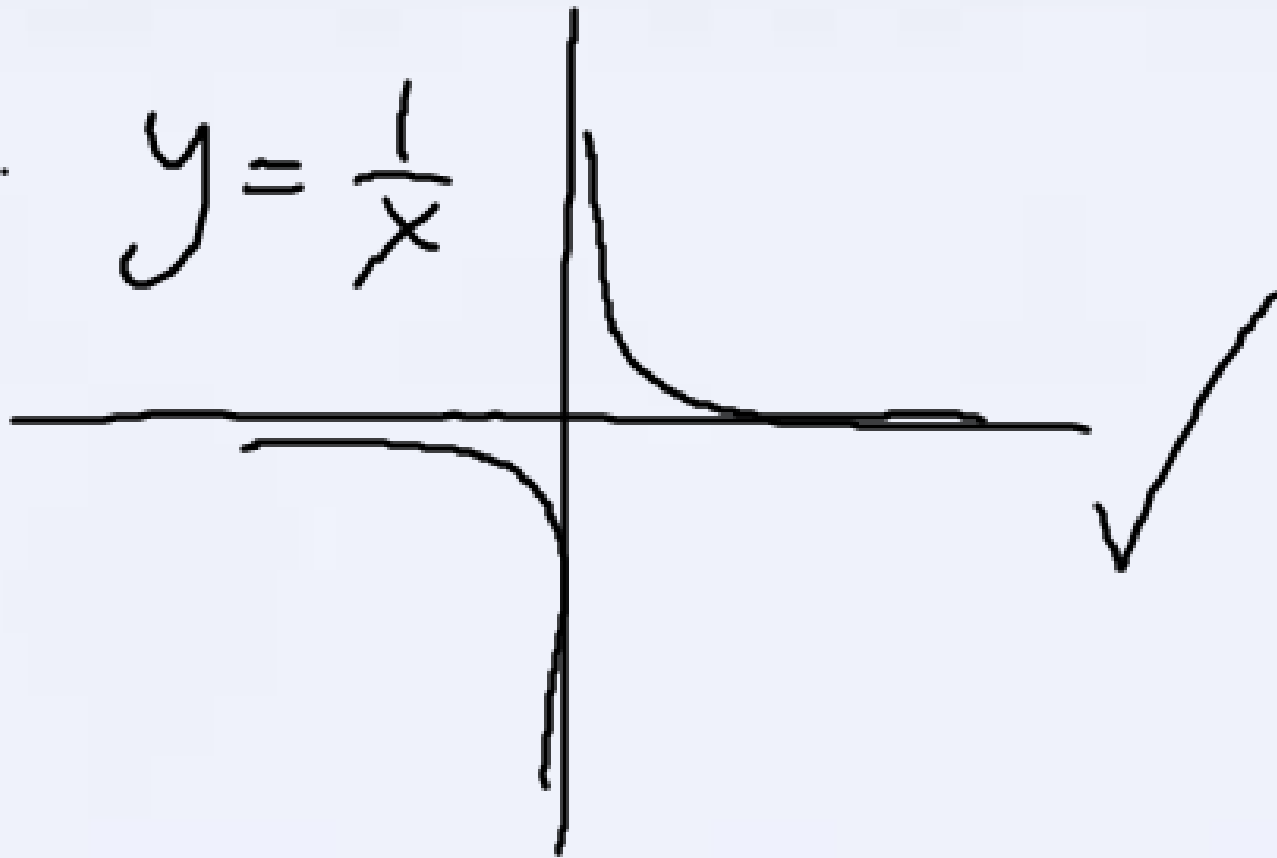
$$\begin{aligned}h) f(x+h) &= 3(x+h)^2 + 2(x+h) - 4 \\ &= 3(x^2 + 2hx + h^2) + 2(x+h) - 4 \\ &= 3x^2 + 6xh + 3h^2 + 2x + 2h - 4\end{aligned}$$

$$= 3x^2 + 3h^2 + 6xh + 2x + 2h - 4$$

## HOMWORK QUESTIONS...

29.

$$y = \frac{1}{x}$$



$$40e) \quad f(x) = -2x^2 + x - 1$$

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

# SECTIONS 2.1C

## FUNCTIONS ARE FUN!

If you see an asterisk\*, then I would recommend you write the information in your notes :)

# OBJECTIVE 4

FORM THE SUM, DIFFERENCE, PRODUCT, AND  
QUOTIENT OF TWO FUNCTIONS



**If  $f$  and  $g$  are function:**

**The sum  $f + g$  is the function defined by**

$$(f + g)(x) = f(x) + g(x)$$

**The difference  $f - g$  is the function defined by**

$$(f - g)(x) = f(x) - g(x)$$

The product  $f \cdot g$  is the function defined by

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

The quotient  $\frac{f}{g}$  is the function defined by

$$\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)} \quad g(x) \neq 0$$

## EXAMPLE.....

### Operations on function

For the functions  $f(x) = 2x^2 + 3$      $g(x) = 4x^3 + 1$   
Find the following...

(a)  $(f + g)(x) \Rightarrow 2x^2 + 3 + 4x^3 + 1$   
 $4x^3 + 2x^2 + 4$

(b)  $(f - g)(x)$

$(2x^2 + 3) - (4x^3 + 1)$   
 $2x^2 + 3 - 4x^3 - 1$

(c)  $(f \cdot g)(x)$

(d)  $\left(\frac{f}{g}\right)(x)$

$-4x^3 + 2x^2 + 2$

$$f(x) = 2x^2 + 3$$

$$g(x) = 4x^3 + 1$$

$$c) (2x^2 + 3)(4x^3 + 1)$$

$$8x^5 + 2x^2 + 12x^3 + 3$$

$$8x^5 + 12x^3 + 2x^2 + 3$$

$$2x^2 + 3$$

$$4x^3 + 1$$

$$d) \frac{2x^2 + 3}{4x^3 + 1}$$

↖ stays same  
b/c nothing cancels  
nothing factors.

# **DAY 3 ASSIGNMENT**

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**#61, 64, 69, 73**