

$$5x - 2y \leq 75$$



$$\begin{bmatrix} a & b \\ c & d \end{bmatrix}$$



$$S = Pe^{rt}$$



$$APY = \left(1 + \frac{r}{n}\right)^n - 1$$

Math 1090 ~ Business Algebra

Section 3.7 Combinations of functions

Objectives:

- Form compositions of two functions.
- Determine the domain of the composite function.
- Perform arithmetic of functions.

Two functions can be combined to form a new function in these ways.

- addition $(f + g)(x) = f(x) + g(x)$
- subtraction $(f - g)(x) = f(x) - g(x)$
- multiplication $(f \cdot g)(x) = f(x) \cdot g(x)$
- division $\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$
- composition $(f \circ g)(x) = f(g(x))$

Ex 1 Given $f(x) = 2x + 5$ $g(x) = \frac{1}{x^3}$

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

b) $(f + g)(1)$

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

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

Ex 2: Given $f(x) = x^2 - 1$ $g(x) = \frac{x}{2}$ $h(x) = \sqrt{x-1}$ find

a) $(h \circ f)(x)$

d) $g(h(x))$

b) $(g - h)(1)$

e) $h(f(g(x)))$

c) $(hf)(3)$

Ex 3: For these functions, find $g(h(x))$ and its domain.

Ex 4: The daily cost of producing x units in a manufacturing process is $C(x) = 11x + 350$. The number of units produced in t hours during a day is given by $x(t) = 10t$ for $0 \leq t \leq 8$. Find, simplify and interpret $C(x(t))$.