MAT 012 Lecture Notes, Ch 12.1: Composition of Functions

## Composite Functions:

Let $f(x)$ and $g(x)$ be given functions, then

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

in detail:

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


Example 1: a) Let $f(x)=2 x-3$ and $g(x)=x^{2}$
Evaluate $(f \circ g)(3)$
b) Let $f(x)=2 x-3$ and $g(x)=x^{2}$ Give $(f \circ g)(x)$
c) Let $f(x)=2 x-3$ and $g(x)=x^{2}$

$$
\text { Evaluate }(g \circ f)(-2)
$$

d) Let $f(x)=2 x-3$ and $g(x)=x^{2}$

Give $(g \circ f)(x)$ and simplify as much as possible.

Example 2: a) Let $f(x)=\sqrt{x+1}$ and $g(x)=x^{2}-5$
Give $(f \circ g)(x)$ and simplify .
b) Let $f(x)=\sqrt{x+1}$ and $g(x)=x^{2}-5$

Give $(g \circ f)(x)$ and simplify as much as possible.

