

Chapter 16 Section 4: Composition of Functions

## WARM-UP

- Evaluate and graph the piecewise function below. $f(x)=x-2, \quad x \leq-3$

$$
\begin{aligned}
& 5, \quad-3>x \leq 6 \\
& -2 x+1, \quad x>6
\end{aligned}
$$

$f(-1)=$
$f(5)=$
$f(10)=$

# Chap. 16 Sect 4: Learning Targets 

- I can recognize a composition of functions
- I can simplify a composition of functions
- I can use composition of functions to check if they are inverses of each other.


## Composite of Two Functions

The combination of two functions such that the output from one function becomes the input for the other.

$$
\begin{gathered}
(f \circ g)(x)=\text { or } f(g(x))= \\
\text { "f of } g(x) "
\end{gathered}
$$

So if...
$f(x)=4 x$
$g(x)=3 x+2$

## Solving Composite of Functions

To solve a composite, substitute \& solve as much as possible So if...

$$
\begin{array}{lrr}
f(x)=4 x & \& & g(x)=3 x+2 \\
\hline \text { "f of } g(x) " & & " g \text { of } f(x) " \\
\hline f(g(x))= & g(f(x))=
\end{array}
$$

## Checking For an Inverse

You can use compositions of functions to determine whether two functions are inverses of eachother.

If $f(x) \& g(x)$ are inverse functions,

$$
\text { then } f(g(x))=g(f(x))=x
$$

## Try it...

$$
f(x)=\frac{x+8}{3}
$$

$$
g(x)=3 x-8
$$

