Combining Functions

① Performing operations with Function
↳ +, −, ×, ÷

TO combine two functions, $f(x)$ and $g(x)$

Sum of functions

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

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

↑ first combining the functions first then evaluate w/ the given x value.

Difference of functions

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

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

The combined function $h(x) = (f \cdot g)x$ represent the product of two functions $f(x) \cdot g(x)$

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

The combined function $h(x) = \left(\frac{f}{g}\right)x$ where

it represents the quotient of two functions $f(x)$ and $g(x)$

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

x ← cannot be equal to 0.

$$g(x) \neq 0.$$

The domain of a product or quotient of function is the domain that is common to both $f(x)$ and $g(x)$

$f(x)$ D: $(-\infty, \infty)$

$g(x)$ D: $[0, \infty)$

] the common domain is $[0, \infty)$

CH 3 pg 22 on example booklet

Pg22b) inverse of the function. Sketch the $f(x)$ and $f^{-1}(x)$

$y = (x-2)^2 + 5$ ← Quadratic function written in vertex form

The vertex is $(2, 5)$

The lead coefficient is +'ve that means parabola opens up.

Determine the inverse function of $f(x)$.

$y = (x-2)^2 + 5$

$x = (y-2)^2 + 5$ switch places of x and y variables.

$\sqrt{x-5} = \sqrt{(y-2)^2}$ Solve for y (meaning isolate y on one side of equation. Do this algebraically.

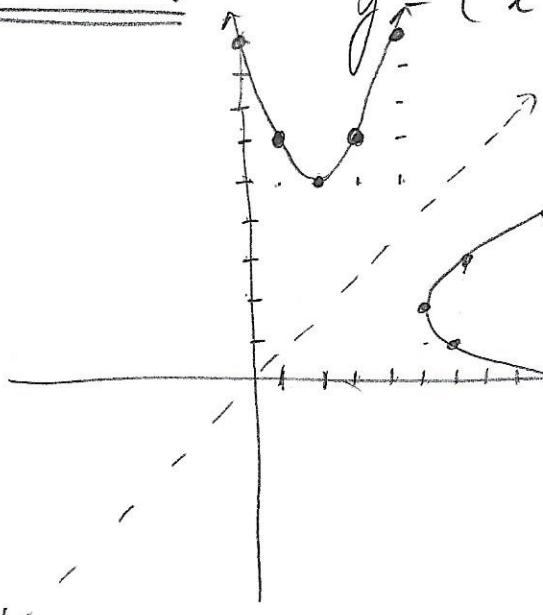
$\pm\sqrt{x-5} = y-2$

$2 \pm \sqrt{x-5} = y$

$\boxed{y = 2 \pm \sqrt{x-5}}$

Graphing

$y = (x-2)^2 + 5$



$f(x)$	$f^{-1}(x)$
(x, y)	(y, x)
$(0, 9)$	$(9, 0)$
$(1, 6)$	$(6, 1)$
$(2, 5)$	$(5, 2)$
$(3, 6)$	$(6, 3)$
$(4, 9)$	$(9, 4)$