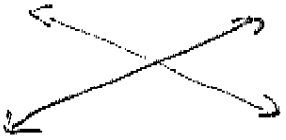
2.8 : Inverse Functions

Two examples:

- S : hrs studied ⟶ % on test
- B : hrs ⟶ bacteria on a petri dish (carbon dating)

What features do $f(x) = \sqrt{x+2}$ & $g(x) = x^2 - 2,\ x \geq 0$ share?

(1) D_f D_g R_f R_g



(2) Graphs (symmetric about $y = x$)

(3) compositions

x	-2	-1	2	7	$\cdots$
$f(x)$					
$g(f(x))$					

a) $g(f(x)) = g(\sqrt{x+2})$

b) $f(g(x)) = f(x^2 - 2),\ x \geq 0$

Facts of these characteristics & inverses:

2.3
2/2

Characteristics of Inv. Fcts

(0) notation

(1) D & R

(2) Graphs

(3) composition

Question: Does the inv. of a fct always exist?

Horizontal Line Test

Question: What is the relationship between pts on f & pts on f^{-1}

Find the inverse

ex 1: $f(x) = \frac{1}{5}x$

ex 2: $g(x) = 2x+3$

ex 3: $h(x) = 3 - \frac{2}{x}$

ex 4: $f(x) = \frac{2x}{x+1}$

ex 5: $g(x) = 8x^3 - 5$

ex 6: $h(x) = 2 - \sqrt{3-x}$

ex 7: $f(x) = x^2 + 2x + 3, \; x \leq -1$

Notes

1) 5th nuts on calc

2) comp. on calc.