M 191

Lect #22

4-13-11

To evaluate

(a) a fcn f

$\boxed{1}$

3 ↵

9

$\boxed{y=}$

$y1 = x^2$

graph

2nd Calc

$\boxed{6}$ $\frac{dy}{dx}$

3 ↵

6

$\boxed{\text{Math}}$

8

$\boxed{8}$ nderiv

nder$(x^2, x, 3)$ ↵

6

(b) the derivative of f

(c) the integral of f

$y1 = x^2$

graph

2nd Calc

$\boxed{7}$ $\int f$

low lim?

1 ↵

upp lim

3 ↵

8.666

Math

$\boxed{9}$

fnInt$(x^2, x, 1, 3)$

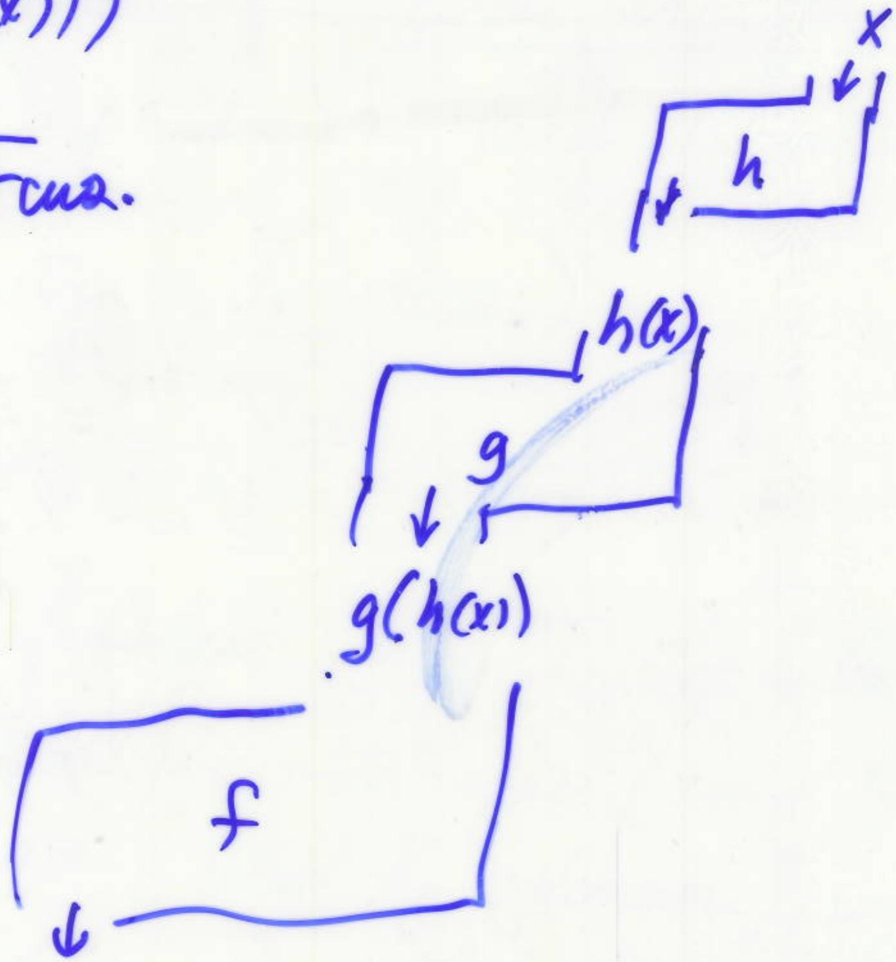
↵

$8\frac{2}{3}$

The last chapter – Chapter 7
Transcendental Functions

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

Composite Fcns.

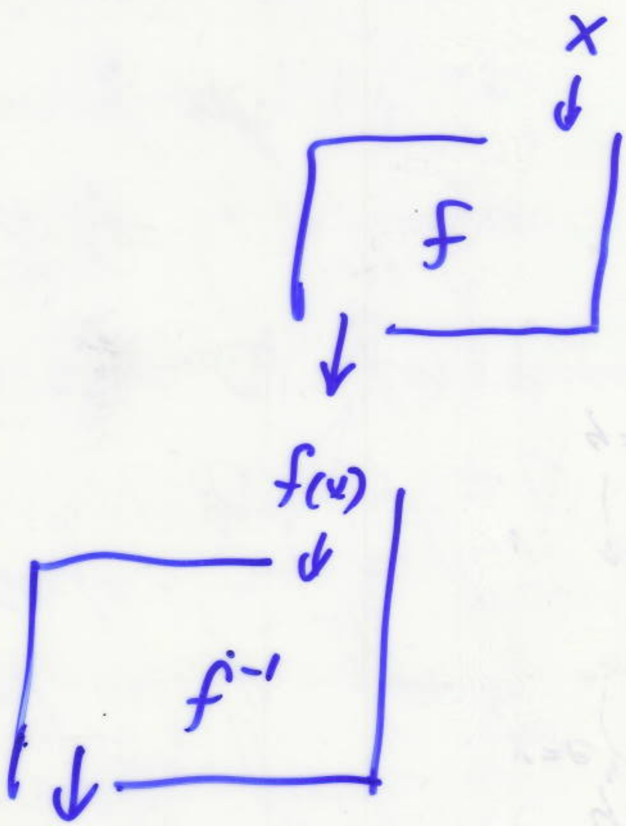


$f(g(h(x)))$

Inverse fcn

$$f^{-1}(f(x)) = x$$

we create this f^{-1} fcn to undo the f fcn



$$f^{-1}(f(x)) = x$$

Let's find the inverse of this fcn

$f(x) = y = x^3 - 1$.

Numerical

x	$y = f(x)$
-3	-28
-2	-9
-1	-2
0	-1
1	0
2	7
3	26

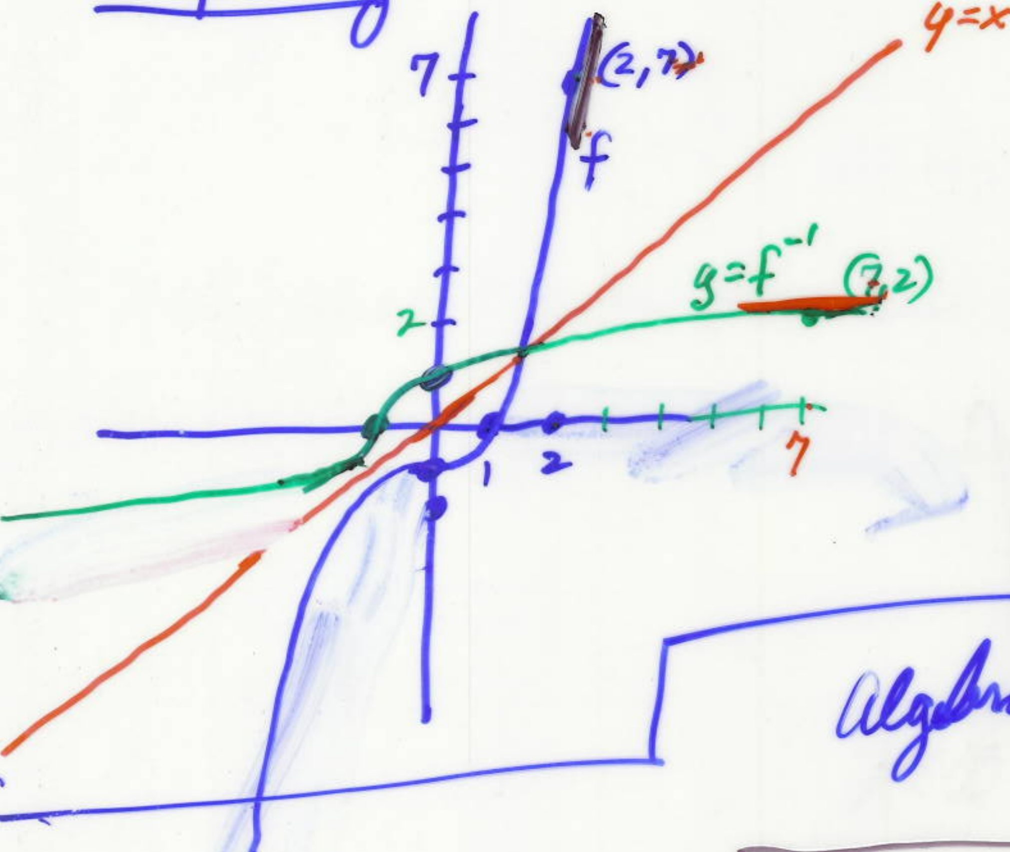
new x	new y
-28	-3
-9	-2
-2	-1
-1	0
0	1
7	2
26	3

$\uparrow$

a table for f

Graphically

$y = x^3 - 1$



Algebraically

$y = x^3 - 1 = f(x)$

swap

$x = y^3 - 1$

solve

$x + 1 = y^3$

$y^3 = x + 1$

$y = \sqrt[3]{x+1}$

name

$y = \sqrt[3]{x+1} = g(x) = f^{-1}(x)$

$m_{tan} = f'(2)$

$m_{tan} = g'(7)$

$m_{tan} = \dfrac{1}{m_{tan}}$

$f'(2) = \dfrac{1}{g'(7)}$

$$f'(x_0) = \frac{1}{g'(f(x_0))}$$

$$g'(x) = \frac{1}{f'(g(x))}$$

The deriv of the inverse ..

is the inverse of the derivative.