[for Roots]

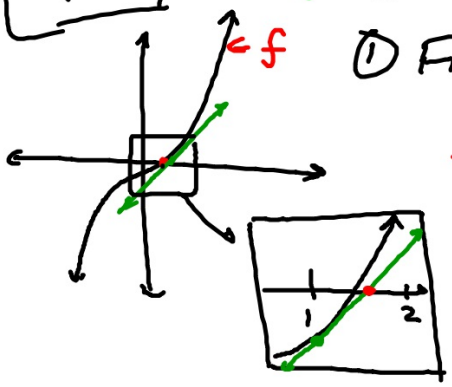
Newton's Method: a cool application of linearization

Estimate the x-value for which $x^3 = 3$.

In $[1, 2]$

$\sqrt[3]{3}$

$f = x^3 - 3 = 0$



① Find tangent line @ point "near" the root.

(near $x = 1$).

$y + 2 = 3(x - 1)$

$y - y_1 = m(x - x_1)$

② Find the x-int of the tan line.

$0 + 2 = 3(x - 1)$

$\frac{2}{3} = x - 1$

$1\frac{2}{3} = x$

Estimate the value for which cos(x)=x in the interval [0,2]

Review of Curve Sketching

Practice assessment question:

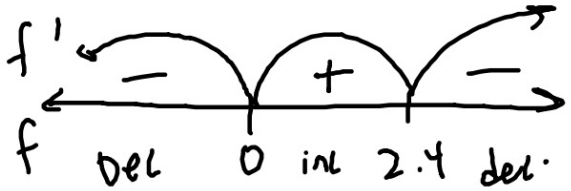
Over what interval(s) is the following function increasing concave up?

Show the analysis that leads to your answer.

3x^4-x^5

$f(x) = 3x^4 - x^5$

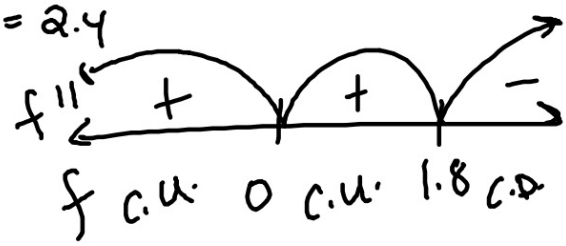
$f' = 12x^3 - 5x^4$



$x^3(12 - 5x) = 0$

C.N: $x = 0, \; x = \frac{12}{5} = 2.4$

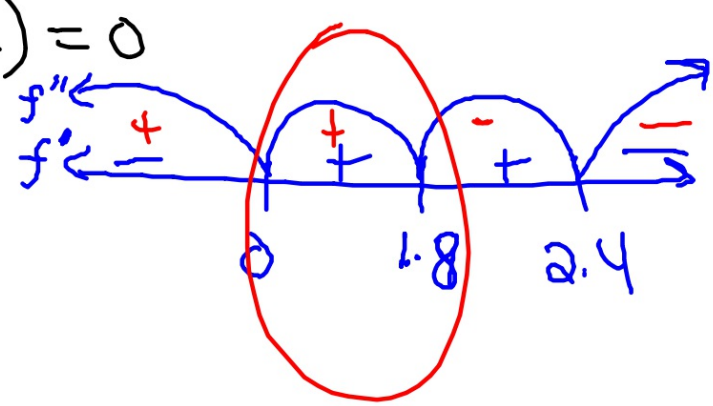
$f'' = 36x^2 - 20x^3$



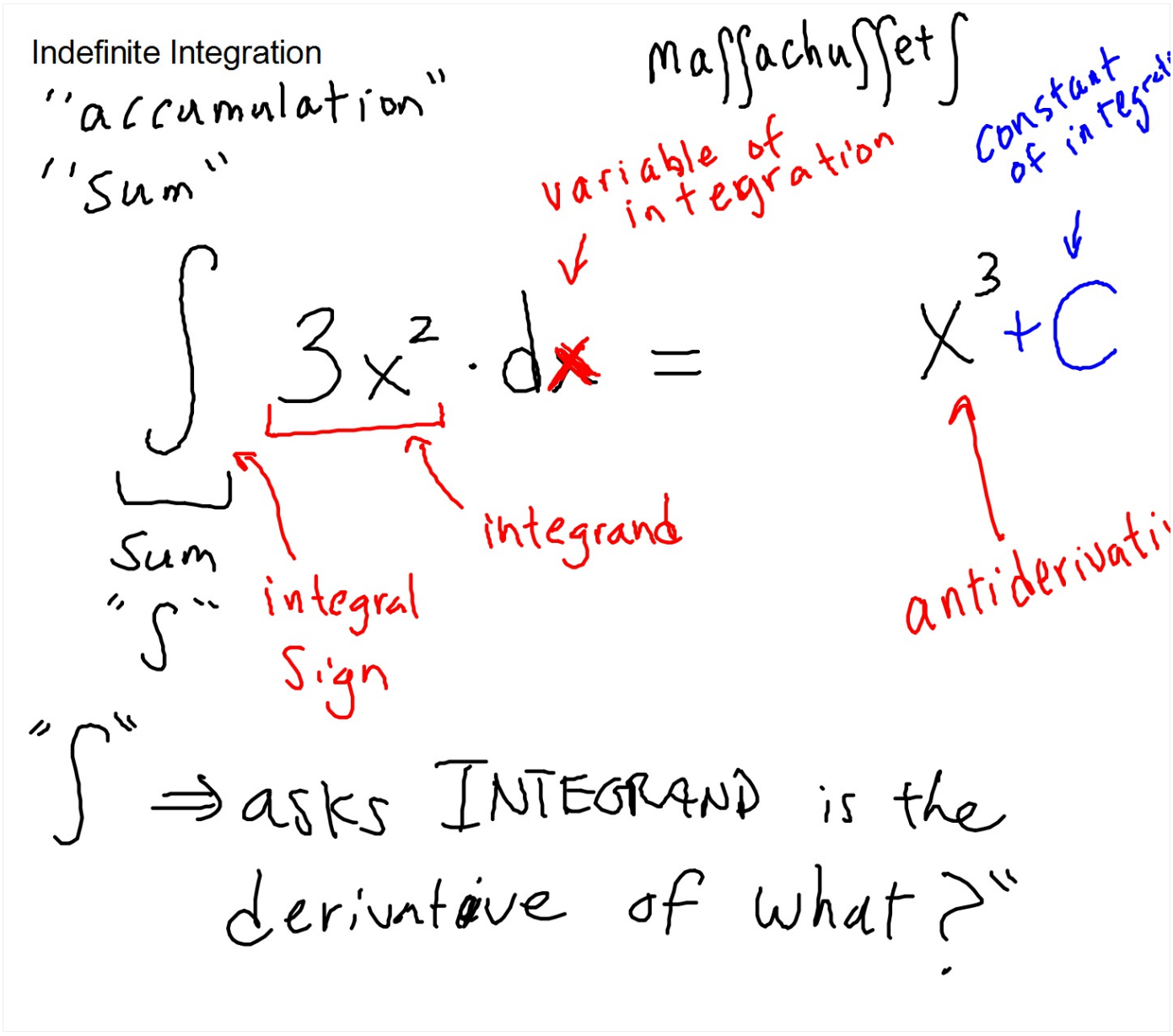
$4x^2(9 - 5x) = 0$

$x = 0 \quad x = 1.8$

T.P.



(0, 1.8)


Indefinite Integration
"accumulation"
"sum"
Massachusset ∫
variable of integration
Constant of integ
$\int 3x^2 \cdot dx = x^3 + C$
Sum
"∫"
integral sign
integrand
antideriv
"∫" ⇒ asks INTEGRAND is the derivative of what?"