Antidifferentiation and Rectilinear Motion

Previously ...

Given $s(t) =$

$v(t) =$

$a(t) =$

Time to max ht: $v(t) = 0 \rightarrow t = \Delta$

Max ht : $s(\Delta) = \checkmark$

Time to gnd : $s(t) = 0 \rightarrow t = \star$

Vel at gnd : $v(\star) = \smile$

Now...

Given: $t = 0$

$s =$

$v =$

$a(t) =$ → $a(t) = 8t - 1$ whatever

→ $a(t) = -32$ ft/in/mi

or

$a(t) = -9.8$ m/cm/Km

Particle moves straight line. Accel given by $a(t) = 6t + 4$. If initial posit. is 9 units right of zero and initial vel is -6, find the pos. func.

$t = 0$

$s = 9$

$v = -6$

$a(t) = 6t + 4$

$a(t) = 6t + 4$

$v(t) = 3t^2 + 4t + C$

$-6 = C$

$v(t) = 3t^2 + 4t - 6$

$s(t) = t^3 + 2t^2 - 6t + D$

$9 = D$

$$\boxed{s(t) = t^3 + 2t^2 - 6t + 9}$$

Ball thrown vert up from a 432 ft cliff with a vel of 48 ft/sec. Find the max ht & vel at impact.

$t = 0$

$s = 432$

$v = 48$

$a(t) = -32$

$a(t) = -32$

$v(t) = -32t + C$

$48 = C$

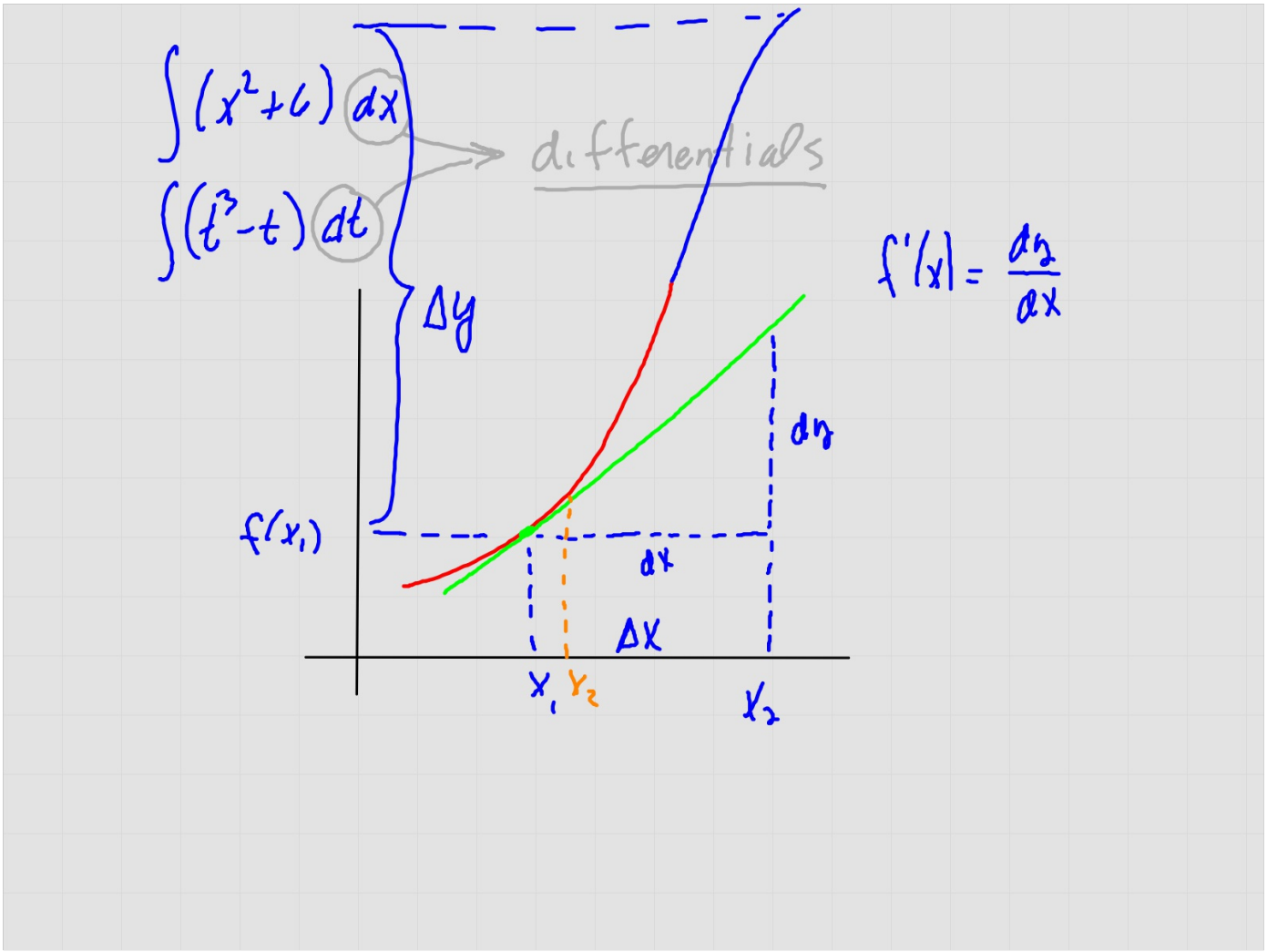
$v(t) = -32t + 48$

$s(t) = -16t^2 + 48t + D$

$432 = D$

$s(t) = -16t^2 + 48t + 432$

and so on... ✓


$\int (x^2+C)\,dx$
$\int (t^3-t)\,dt$
differentials
Δy
$f'(x) = \frac{dy}{dx}$
dy
$f(x_1)$
dx
Δx
x_1
x_2
x_2