Antidifferentiation and Rectilinear Motion

Previously...

Given $s(t) =$

$v(t) =$

$a(t) =$

Now...

Given: initial cond.

$t = 0$

$s =$

$v =$

$a(t) =$ → like $a(t) = 4t + 6$

$a(t) = -32$

$a(t) = -9.8$

Particle moves in straight line. Its accel is given by $a(t) = 6t + 4$. The initial pos. is 9 units right of zero and initial vel is -6.
Find the pos. funct.

$t = 0$

$s = 9$

$v = -6$

$a(t) = 6t + 4$

$a(t) = 6t + 4$

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

$-6 = C$

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

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

$9 = D$

$\therefore s(t) = t^3 + 2t^2 - 6t + 9$

Ball thrown vertically upward at 48 ft/sec from a cliff 432 ft tall. Find the max ht & find the vel when ball hits ground.

$t=0$

$s = 432$

$v = 48$

$a(t) = -32$

$a(t) = -32$

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

$48 = C$

$$\boxed{v(t) = -32t + 48}$$

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

$432 = D$

$$\boxed{s(t) = -16t^2 + 48t + 432}$$

and so on...