Calculus I Quiz #3

Use the chain (onion) rule to find:

Problem 1 y' for $y = (\cos(8x - 3))^4$

Problem 2 y'' for $y = x^2 - 9\sin(2x) + x^3(x + 2)$

Differentiate implicitly; find y'.

Problem 3 $\sin x + 5y^2 = x^4$

Problem 4 $(\cos y)^2 = (x - 1)^4$

A spherical balloon starts as nothing - a point of radius 0.
It begins inflation at time $t = 0$ seconds at a constant rate of $5\pi \frac{in^3}{sec}$.

Problem 5 At what time is the radius of the balloon 12 in?
(You may recall that the volume of a sphere of radius r is $V = \frac{4}{3}\pi r^3$.)

Problem 6 At the time found in #5, how fast is the radius expanding?