WHAT DID THE CALCULUS TEACHER SAY TO HER NERVOUS STUDENTS BEFORE THE QUIZ ON THE CHAIN RULE?

Derivatives of Composite Functions

If $y = f(g(x))$

then $y' = f'(g(x))g'(x)$

$y = (1 - 2x^4)^7$

$y' = 7(1 - 2x^4)^6 \cdot (-8x^3)$

$y' = -56x^3(1 - 2x^4)^6$

Find the derivative y' of each function.

1) $y = 4x^4 + 12x^2 + 9$	2) $y = x^3 + 6x^2 + 12x + 8$	3) $y = 1 - 10x^3 + 25x^6$
4) $y = (2x^2 + 3)^2$	5) $y = (x + 2)^3$	6) $y = (1 - 5x^3)^2$
7) $y = 3(x^2 + 2x)^2$	8) $y = \left(1+\sqrt{x}\right)^2$	9) $y = \left(1-\frac{1}{x}\right)^2$
10) $y = 2(2x^2 + 3)^5$	11) $y = \sqrt{x^2 - 4}$	12) $y = -5\sqrt{2-x}$
13) $y = \frac{-1}{x^2 - 4}$	14) $y = \frac{-1}{\sqrt{x^2 - 4}}$	15) $y = -5\sqrt[3]{2-x}$

Derivatives.

E. $y' = 8x(2x^2+3)$	O. $y' = -30x^2(1-5x^3)$	R. $y' = 12x(x+1)(x+2)$	S. $y' = 3(x+2)^2$
C. $y' = 40x(2x^2+3)^4$	L. $y' = \frac{x}{(x^2-4)^{3/2}}$	M. $y' = \frac{2x}{(x^2-4)^2}$	P. $y' = \frac{x}{\sqrt{x^2-4}}$
S. $y' = \frac{5}{2\sqrt{2-x}}$	U. $y' = \frac{5}{3(2-x)^{2/3}}$	V. $y' = \frac{1+\sqrt{x}}{\sqrt{x}}$	Y. $y' = \frac{2}{x^2} - \frac{2}{x^3}$

10	3	13	11	6	12	4

9	6	15	7	2	1	14	8	4	5