Calculus – Derivative Droodle from The Far Side…

Find the answer to each derivative problem below and write its corresponding letter in the blank beside the problem number. After you have completed all the problems, find the caption to the droodle by substituting letters in the appropriate blanks.

In problems 1 – 7, use the following table of values at x=1 and x=-2 to determine the indicated derivatives:

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	1	3	-2	-1
-2	-2	-5	1	7

Problems

_____ 1. $\frac{d}{dx}[f^2(x)-3g(x^2)]$ at x = 1

_____ 2. $\frac{d}{dx}[f(x)g(x)]$ at x = -2

_____ 3. $\frac{d}{dx}[f(g(x))]$ at x = 1

_____ 4. $\frac{d}{dx}[f(g(x))]$ at x = -2

_____ 5. $\frac{d}{dx}[g(g(x))]$ at x = -2

_____ 6. $\frac{d}{dx}[g^3(x)]$ at x = 1

_____ 7. $\frac{d}{dx}[f(g(4-6x))]$ at x = 1

_____ 8. If $y=(4x^2-1)(7x^3+x)$, find y'

_____ 9. Determine $\frac{d}{dx}(\sqrt{x})$

_____ 10. If $y=\pi^3$, find $\frac{dy}{dx}$

Answers

A. $-\frac{1}{x^2}$

C. $-\sin(\frac{x}{2})$

D. 12

E. $-\frac{1}{2}\cos(\frac{x}{2})$

F. $\frac{1}{2\sqrt{x}}$

G. $140x^4-9x^2-1$

H. $-\frac{x}{y}$

I. -19

L. 5

M. $y=-3x+17$

N. $y=5x+17$

O. 0

_____ 11. If $x + 2xy - y^2 = 2$, then $\frac{dy}{dx}$ at (1,1) is:

P. 21

_____ 12. If $y = 2\cos(\frac{x}{2})$, then $\frac{d^2y}{dx^2} =$

S. -7

_____ 13. If $f(x) = \frac{1}{x}$, then $f'(x) =$

T. nonexistent

U. -12

_____ 14. Find $\frac{dy}{dx}$ if $x^2 + y^2 = 100$

Y -126

_____ 15. Find an equation of the tangent line to the graph $y = f(x)$ at the point where x = -3 if f(-3) = 2 and f'(-3) = 5.

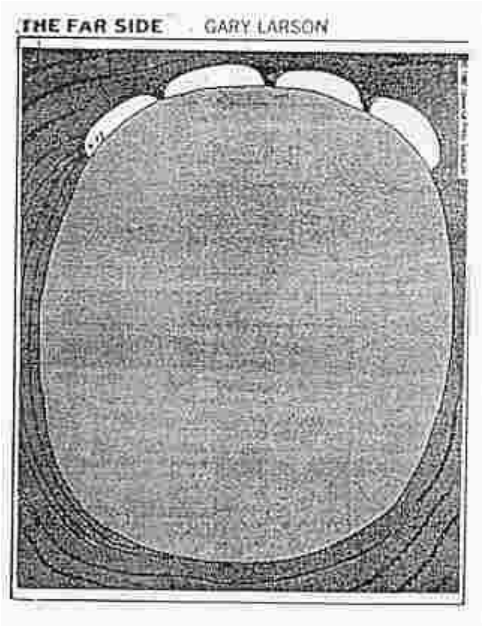
Z. None of the above

____	____	____		____	____	____	____		____	____	____	____	____		____	____	____		
11	14	12		3	13	5	11		11	14	2	15	8		7	10	6		

____	____	____		____	____		____	____		____	____	____	____	____	____	____			
5	12	12		10	9		13	15		13	15	15	10	7	12	1			

____	____	____	____	____	____	____	____												
12	3	12	4	14	13	15	11												

Can you determine the Title for this Far Side Droodle?



Many thanks to Samuel Iofel for correcting the error in my puzzle.