CACCULUS - 12

Find $\frac{\Delta y}{\Delta x}$ of the following functions

1. $f(x) = x^2$
2. $f(x) = x^3$
3. $f(x) = 2x + 3$
4. $f(x) = x^2 - x + 1$
5. $f(x) = 1 + \sqrt{x}$
6. $f(x) = \frac{1}{x^2}$
7. $f(x) = \frac{1}{2x + 1}$ OUT
8. $f(x) = \frac{x}{x + 1}$ OUT
9. $f(x) = 2x^2 - x + 5$
10. $f(x) = x^3 - 12x + 11$
11. $f(x) = x^4$
12. $f(x) = ax^2 + bx + c$ (a, b, c constants)
13. $f(x) = x - \frac{1}{x}$
14. $f(x) = ax + \frac{b}{x}$ (a, b constants)
15. $f(x) = \sqrt{2x}$ OUT
16. $f(x) = \sqrt{x + 1}$

1. $2x$ 2. $3x^2$ 3. 0 4. $2x-1$ 5. $\frac{1}{2}x^{-\frac{1}{2}}$ 6. $-2x^{-3}$ or $\frac{-2}{x^3}$
7. $\frac{-2}{(2x+1)^2}$ 8. $\frac{1}{(x+1)^2}$ 9. $4x-1$ 10. $3x^2-12$ 11. $4x^3$
12. $2ax+b$ 13. $1+\frac{1}{x^2}$ 14. $a-\frac{b}{x^2}$ 15. $\frac{1}{\sqrt{2x}}$ 16. $\frac{1}{2\sqrt{x+1}}$

XX DOUBLE CROSS XX

1. What do you get when you cross A HUNTING DOG WITH A TELEPHONE?

$\frac{1}{2}$ $2x-1$ 0 -3 $\frac{1}{\sqrt{x^3}}$ 5 $\frac{-1}{\sqrt[3]{x^4}}$ $\sqrt{x}$ 5 x^4 5 $2x+1$ 4 5 $\sqrt{x}$

2. What do you get when you cross A MOTORCYCLE WITH A JOKE BOOK?

$\frac{1}{2}$ $8x+4$ $\frac{1}{2}$ -1 $\frac{1}{2}$ $2x-3$ $\frac{1}{2}$ $2x-3$ $\frac{1}{2}$ $2x-3$ $\frac{1}{2}$

3. What do you get when you cross FIVE PIGS AND FIVE DEER?

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2 5 $\frac{-1}{\sqrt[3]{x^4}}$ $-4x$ 0 3 $-4x$ $\frac{1}{2}$ $\frac{-1}{\sqrt[3]{x^4}}$ $\frac{1}{\sqrt{x^3}}$ 16 1 x^4 -2 $-4x$

To decode the answers to these three questions:
Do any exercise below and find your answer in the code. Each time the answer appears in the code, write the letter of that exercise above it.
Keep working and you will discover what you get from each double cross!

Find the derivatives of the following functions:

D $f(x)=\frac{-2}{\sqrt{x}}$

I $f(x)=(x-1)(x+2)$

O $f(x)=\pi^2$

M $f(x)=2-x$

U $f(x)=\frac{x^2+6x+9}{x+3}$

T $f(x)=\sqrt{4x^2-12x+9}$

R $f(x)=\frac{2}{3}x\sqrt{x}$

K $f(x)=\frac{x-2x^2+3}{x+1}$

V $f(x)=\frac{(4x+1)^3}{16x^2+8x+1}$

N $f(x)=\frac{3}{\sqrt[3]{x}}$

Y $f(x)=(2x+1)^2$

C $f(x)=\frac{1}{5}x^5+5$

G $f(x)=\frac{x(x-1)^4}{\sqrt{(x^2-2x+1)^3}}$

B $f(x)=\frac{(4x)^2}{x}$

L $f(x)=\frac{(9x^2-1)}{(1-3x)}$

W $f(x)=(3x^3+5x^2+x-1)(x^2+2x+1)^{-1}$

E $f(x)=\sqrt{25x^2}$

H $f(x)=(x-5)(x+2)$

A $f(x)=\frac{1}{2}x+2006$

S $f(x)=\sqrt[3]{-8x^6}$