

Classe: TS1ET	Date: 18/12/2013	Type
Devoir n°6		<u>Interrogation</u>
Thème: Calcul de dérivées		

Calculer les dérivées des fonctions données :

1°) $f(x) = 3x^4 + 7x^3 - 2x + 7$

2°) $f(x) = \frac{4x-1}{2x+3}$

3°) $f(x) = \frac{1}{2x+1}$

4°) $f(x) = \frac{4}{x} - x$

5°) $f(x) = \frac{4}{3x+4} - \frac{1}{x}$

6°) $f(x) = 3x^2 - \frac{5}{x^4}$

7°) $f(x) = \frac{(x^2+x+2)}{(x^2+1)}$

8°) $f(x) = (2x-1)^4$

9°) $f(x) = \cos(5x+3)$

①° $f'(x) = 3 \times 4x^3 + 7 \times 3x^2 - 2 = \boxed{12x^3 + 21x^2 - 2}$ ②

②° $f'(x) = \frac{u'v - uv'}{v^2}$ avec $\begin{cases} u = 4x-1 & u' = 4 \\ v = 2x+3 & v' = 2 \end{cases}$
 $f'(x) = \frac{4(2x+3) - (4x-1) \times 2}{(2x+3)^2} = \frac{12+2}{(2x+3)^2} = \boxed{\frac{14}{(2x+3)^2}}$ ②

③° $f'(x) = -\frac{v'}{v^2} = \boxed{-\frac{2}{(2x+1)^2}}$ ②

④° $f'(x) = 4 \times (-\frac{1}{x^2}) - 1 = \boxed{-\frac{4}{x^2} - 1}$ ② ③

⑤° $f'(x) = 4 \times \left(-\frac{3}{(3x+4)^2}\right) + \frac{1}{x^2} = \boxed{-\frac{12}{(3x+4)^2} + \frac{1}{x^2}}$ ③

⑥° $f(x) = 3x^2 - 5x^{-4}$
 $f'(x) = 6x - 5 \times (-4x^{-5}) = \boxed{6x + \frac{20}{x^5}}$ ②

⑦° $f'(x) = \frac{u'v - uv'}{v^2}$ avec $\begin{cases} u = x^2+x+2 & u' = 2x+1 \\ v = x^2+1 & v' = 2x \end{cases}$

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

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

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

⑧° $f'(x) = 4(2x-1)^3 \times 2 = \boxed{8(2x-1)^3}$ ②

⑨° $f'(x) = -\sin(5x+3) \times 5 = \boxed{-5\sin(5x+3)}$ ①