

Exercice 4.2.

a) $(x^7)' = \boxed{7x^6}$

b) $(x^4 + x^3)' = (x^4)' + (x^3)' = \boxed{4x^3 + 3x^2}$

c) $(4x^3 + 2x^2 + 7x + 5)' = 4(x^3)' + 2(x^2)' + 7(x)' + 5' = 4 \cdot 3x^2 + 2 \cdot 2x + 7 \cdot 1 + 0 = \boxed{12x^2 + 4x + 7}$

d) $\left(\frac{1}{2}x^3 + x^2 + 4x - \frac{3}{4}\right)' = \frac{1}{2}(x^3)' + (x^2)' + 4(x)' - \left(\frac{3}{4}\right)' = \frac{1}{2} \cdot 3x^2 + 4 \cdot 1 - 0 = \boxed{\frac{3}{2}x^2 + 4}$

e) $(\sqrt{3}x + \pi)' = \sqrt{3}(x)' + \pi' = \sqrt{3} \cdot 1 + 0 = \boxed{\sqrt{3}}$

f) $(6x^4 - 2x^3 + x^2 - 9x + 5)' = 6(x^4)' - 2(x^3)' + (x^2)' - 9(x)' + 5' =$
 $= 6 \cdot 4x^3 - 2 \cdot 3x^2 + 2x - 9 \cdot 1 + 0 = \boxed{24x^3 - 6x^2 + 2x - 9}$

g) $(x^{103} + 2x^{57} - 5x^4 + 4)' = (x^{103})' + 2(x^{57})' - 5(x^4)' + 4' =$
 $= 103x^{102} + 2 \cdot 57x^{56} - 5 \cdot 4x^3 + 0 = \boxed{103x^{102} + 114x^{56} - 20x^3}$

h) $[(4x - 11)(x^2 + x + 7)]' = (4x^3 + 4x^2 + 28x - 11x^2 - 11x - 77)' = (4x^3 - 7x^2 + 17x - 77)' =$
 $= 4(x^3)' - 7(x^2)' + 17(x)' - 77' = 4 \cdot 3x^2 - 7 \cdot 2x + 17 \cdot 1 - 0 = \boxed{12x^2 - 14x + 17}$

Mais on peut aussi faire cette partie h) avec la théorie de la page 94 : voir autre fichier.