Corrigé calculs divers

Exercice 1

1) $\left(-2x+\frac{1}{2}\right)^2=(-2x)^2-2(2x)\left(\frac{1}{2}\right)+\left(\frac{1}{2}\right)^2=4x^2-2x+\frac{1}{4}$

2) $\sqrt{6}-\left(\sqrt{2}-x\right)\left(\sqrt{3}+x\right)=\sqrt{6}-\left(\sqrt{6}+x\sqrt{2}-x\sqrt{3}-x^2\right)=x^2-x\sqrt{2}+x\sqrt{3}$

3) $(3x+5)(3x-5)-(2x+2)^2=(3x)^2-5^2-\left[(2x)^2+2(2x)(2)+2^2\right]=9x^2-25-4x^2-8x-4$
$=5x^2-8x-29$

4) $\left(2x+\sqrt{7}\right)^2-\left(x+\sqrt{7}\right)\left(x-\sqrt{7}\right)=4x^2+4x\sqrt{7}+7-x^2+7=3x^2+4\sqrt{7}x+14$

5) $\left(\frac{1}{3}x-8\right)^2-\left(x+\frac{1}{4}\right)^2=\frac{1}{9}x^2-\frac{16}{3}x+64-x^2-\frac{1}{2}x-\frac{1}{16}=-\frac{8}{9}x^2-\frac{35}{6}x+\frac{1023}{16}$

Exercice 2

1) $\frac{5}{x-5}+\frac{1}{x}=\frac{5x}{(x-5)x}+\frac{1(x-5)}{x(x-5)}=\frac{5x+x-5}{x(x-5)}=\frac{6x-5}{x(x-5)}$

2) $\frac{3+8x}{3-8x}+\frac{2}{5}=\frac{(3+8x)(5)+2(3-8x)}{5(3-8x)}=\frac{15+40x+6-16x}{5(3-8x)}=\frac{24x+21}{5(3-8x)}$

3) $\frac{1}{x-2}+\frac{3}{x-5}=\frac{1(x-5)+3(x-2)}{(x-2)(x-5)}=\frac{x-5+3x-6}{(x-2)(x-5)}=\frac{4x-11}{(x-2)(x-5)}$

4) $\frac{5}{2x-5}-\frac{x}{x-3}-1=\frac{5(x-3)-x(2x-5)-1(2x-5)(x-3)}{(2x-5)(x-3)}=\frac{5x-15-2x^2+5x-2x^2+6x+5x-15}{(2x-5)(x-3)}$
$=\frac{-4x^2+21x-30}{(2x-5)(x-3)}$

5) $\frac{2x-1}{x-1}-\frac{3}{x}+5=\frac{(2x-1)x-3(x-1)+5x(x-1)}{x(x-1)}=\frac{2x^2-x-3x+3+5x^2-5x}{x(x-1)}=\frac{7x^2-9x+3}{x(x-1)}$