4. $f(x) = \dfrac{7}{(x^2-9)^3}$

$= 7(x^2-9)^{-3}$

$f'(x) = 7(-3)(x^2-9)^{-3-1} \cdot \frac{d}{dx}(x^2-9)$

$= -21(x^2-9)^{-4} \cdot (2x)$

$= \dfrac{-42x}{(x^2-9)^4}$

5. $f(x) = x^5(x-7)^8$

P Q

$P' = 5x^4 \quad Q' = 8(x-7)^7 \cdot \frac{d}{dx}(x-7)$

$= 8(x-7)^7 \cdot 1$

$= 8(x-7)^7$

$P'Q + PQ'$

$f'(x) = 5x^4(x-7)^8 + x^5 \cdot 8(x-7)^7$

$= x^4(x-7)^7[5(x-7) + x]$

$= x^4(x-7)^7[5x-35+x]$

$= x^4(x-7)^7(6x-35)$

$= x^4(6x-35)(x-7)^7$