6. $y = \left(\frac{3x^2}{2-x}\right)^5$

$y' = 5\left(\frac{3x^2}{2-x}\right)^4 \cdot \frac{d}{dx}\left[\frac{3x^2}{2-x}\right]$ — P, Q $\quad P' = 6x \quad Q' = -1$

$$\frac{P'Q - PQ'}{Q^2}$$

$= 5\left(\frac{3x^2}{2-x}\right)^4 \cdot \frac{6x(2-x) - 3x^2(-1)}{(2-x)^2}$

$= 5\left(\frac{3x^2}{2-x}\right)^4 \cdot \frac{3x[2(2-x)+x]}{(2-x)^2}$

$= 5\left(\frac{3x^2}{2-x}\right)^4 \cdot \frac{3x[4-2x+x]}{(2-x)^2}$

$= 5\left(\frac{3x^2}{2-x}\right)^4 \cdot \frac{3x(4-x)}{(2-x)^2}$

$= 5 \cdot \frac{(3x^2)^4}{(2-x)^4} \cdot \frac{3x(4-x)}{(2-x)^2}$

$= \frac{5 \cdot (3x^2)^4 \cdot 3x(4-x)}{(2-x)^4 (2-x)^2}$

$= \frac{5 \cdot 3^4 \cdot (x^2)^4 \cdot 3x(4-x)}{(2-x)^6}$

$= \frac{5 \cdot 81 \cdot x^8 \cdot 3x(4-x)}{(2-x)^6}$

81
3
243
5
1215

$= \frac{1215x^9(4-x)}{(2-x)^6}$

$= \frac{1215x^9[-1(-4+x)]}{[-1(-2+x)]^6}$

$= \frac{-1215x^9(x-4)}{(x-2)^6}$