$3\frac{1}{2} = \frac{7}{2}$

8. $f(x) = 2x^5\left(2 + \frac{3}{x-1}\right)$

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

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

$= 2x^5\left(\frac{2x+1}{x-1}\right)$

$= \frac{4x^6+2x^5}{x-1}$) P) Q

$P' = 24x^5 + 10x^4$

$Q' = 1$

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

$f'(x) = \frac{(24x^5+10x^4)(x-1) - (4x^6+2x^5)(1)}{(x-1)^2}$

$= \frac{2x^4(12x+5)(x-1) - 2x^5(2x+1)}{(x-1)^2}$

$= \frac{2x^4\left[(12x+5)(x-1) - x(2x+1)\right]}{(x-1)^2}$

$= \frac{2x^4\left[12x^2 - 12x + 5x - 5 - 2x^2 - x\right]}{(x-1)^2}$

$= \frac{2x^4(10x^2 - 8x - 5)}{(x-1)^2}$