

Q1: $f'(5) = 7$, $K(x) = f(3x^2 + x + 1)$.

Find $K'(1)$

Rule: $K'(x) = f'(L(x)) \cdot L'(x)$

$K(x) = f(L(x))$

$K(x) = f(3x^2 + x + 1)$

$K'(x) = f'(3x^2 + x + 1) \cdot (6x + 1)$

$K'(1) = f'(5) \cdot (7)$

$K'(1) = 7 \cdot 7 = \underline{\underline{49}}$



20/20 (11)

Q2: Find $\frac{dy}{dx}$ $x^2y + xy - x^2 + y^2 + 10 = 0$

$\frac{dy}{dx} = y' = -\frac{f_x}{f_y} = -\frac{2xy + y - 2x + 0 + 0}{x^2 + x - 0 + 2y + 0}$



Q3: $f(x) = \overbrace{(6x^2 + 1)^{10}}^1 \overbrace{(5x^3 + 2x + 1)^7}^2$

$f'(x) = (1)'(2) + (2)'(1)$

~~$(6x^2 + 1)^{10} + 10(6x^2 + 1)^9$~~ $= 10(6x^2 + 1)^9 (12x) (5x^3 + 2x + 1)^7 + 7(5x^3 + 2x + 1)^6 (15x^2 + 2) (6x^2 + 1)^{10}$

