

P.1

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$$1). y = (4x + 9x^8)(4x^7 + 2x^5)$$

$$y' = (4 + 72x^7)(4x^7 + 2x^5) + (4x + 9x^8)(28x^6 + 10x^4)$$

$$\begin{array}{r|l} \therefore \frac{4 + 72x^7}{4x^7 + 2x^5} \times & \therefore \frac{4x + 9x^8}{28x^6 + 10x^4} \times \\ \hline 16x^7 + 288x^{14} & 112x^7 + 252x^{14} \\ 8x^5 + 144x^{12} & 40x^5 + 90x^{12} \\ \hline 288x^{14} + 144x^{12} + 16x^7 + 8x^5 & 252x^{14} + 90x^{12} + 112x^7 + 40x^5 \end{array}$$

$$\begin{array}{r} \therefore 288x^{14} + 144x^{12} + 16x^7 + 8x^5 \\ 252x^{14} + 90x^{12} + 112x^7 + 40x^5 \\ \hline 540x^{14} + 234x^{12} + 128x^7 + 48x^5 \end{array}$$

$$y' = 540x^{14} + 234x^{12} + 128x^7 + 48x^5$$

$$2). y = \arctan \left( \frac{4x + 9x^8}{4x^7 + 2x^5} \right)$$

$$= \arctan \left( \frac{13x}{6x^7} \right)$$

$$y' = \frac{1}{1 + z^2}$$

$$= \frac{1}{1 + \left( \frac{13x}{6x^7} \right)^2}$$