CAT 2 (SMA 2101) - 2024 October

Calculus 2 (Jomo Kenyatta University of Agriculture and Technology)

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SMA 2101 CALCULUS I   **(CAT 2)**   **TIME: 1 HOUR**

1. Find $\dfrac{dy}{dx}$ given

   (a) $y(x) = (x+x^2)^5(1+x^3)^2$ (b) $y(x) = \dfrac{(1-x^2)^3}{(4+5x+6x^2)^2}$ (c) $y(x) = \left[x + (x+x^2)^{-3}\right]^{-5}$

   (d) $y(x) = (\sqrt{x}+1)\sin\left(\sqrt{x+\sqrt{x}}\right)$ (e) $xy^3 - yx^2 = \sqrt{y}$ (f) $\cos(x+y) = \sin(x)\sin(y)$

   (g) $xy = 6e^{2x-3y}$ (h) $y(x) = \tan\left(2 + \sqrt{\sin(2x)}\right)$

2. Given $G(x) = f(h(x))$, $h(1) = 4$, $f'(4) = 3$ and $h'(1) = -6$. Find $G'(1)$.

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