University of Bahrain
Department of Mathematics
MATHS101: Calculus I
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Worksheet: The Chain Rule

Students' Name: _____

1. Find y' for the following:

    1. $f(x) = (x^2 + \tan x + e^x + 5)^3$

    2. $f(x) = \sin^3 x$

    3. $f(x) = \sqrt{x^3 + e^x - \sec x}$

    4. $f(x) = (x \sin x)^5$

    5. $f(x) = \sqrt{x + \sqrt{x}}$

6. $f(x) = \sec^2\left(\frac{1}{x}\right)$

7. $f(x) = \tan^2\left(\sin^3 x\right)$

2. Find $\frac{d^3y}{dx^3}$ for

$$y = \frac{1}{1 + 2x}$$

3. Find an equation of the tangent and normal lines of the curve $y = \sin x + \sin^2 x$ at $x = 0$.