Department of Mathematics and Statistics KFUPM
MATH 101-09 Quiz#4, Time: 40 mins

Student's Name: _____ ID: _____Section No: **09**

Q.No.1:- Suppose that x and y are differentiable functions of t and are related by the equation $x^2y^3 = \frac{4}{27}$. If $\frac{dy}{dt} = \frac{1}{2}$, then find the value of $\frac{dx}{dt}$ at $x = 2$.

Final Answer (**2 point**): _____

Work Shown (**5 points**):

Q.No.2:- If $y = \log_5 \left(\frac{x+4}{x-4}\right)^{\ln 5}$, then find $\frac{dy}{dx}$.

Final Answer (**1 point**): _____

Work Shown (**4 points**):

Q.No.3:- A body is moving along a straight line with position function $s(t) = -t^3 + 3t^2 - 1, t > 0$. Find the total distance traveled by the body from $t = 1$ to $t = 3$. (s in meters, t in seconds)

Final Answer (**2 point**): _____

Work Shown (**4 points**):

Q.No.4:- If $f(x) = x^3 - 3x^2 - 1$, $x \geq 2$, then find the value of $\frac{df^{-1}}{dx}$ at $x = -1$.

Final Answer (**2 point**): _____

Work Shown (**5 points**):

With Best Wishes