Math 101-181-Sec.19 Quiz #3

Name: **ID:** **SR:**

Q.1: suppose that $f(x)$ is differentiable function that satisfies the following: For all real number x, and y $f(x+y) = f(x).f(y)$, $f(x) = 1 + xg(x)$, and $\lim_{x\to 0} g(x) = 1$. If $f(3) = -5$, find $f^{\backslash}(3)$

Q.2: Find the tangent line to the parabola $y = x^2$ that passes through the point $(0, -4)$.

Q.3: If $f(2) = 1$, and $f^{\backslash}(x) = \frac{x^2}{f(x)}$ for all x. Find $f^{\backslash\backslash}(2)$

Q4. If $y = xsin(x)$ find $\frac{d^{40}y}{dx^{40}}$