## Remember to show <u>all</u> of your work.

**Problem 1.** Determine all critical points of $f(x) = 4\sin^2(x+1) + \cos^2(x+1)$ on the interval $[0, 2\pi]$.

**Problem 2.** Compute $dy$ and $\Delta y$ of the function $y = e^{x^2}$ as $x$ goes from $1$ to $0$.