MATH 515 Quiz 4 Name: .
Student number:

Show all work. 5 points each.

1. Find the Laurent series for $f(z) = \dfrac{e^{z^2} - 1}{z^4}$. Find the order of the pole at zero as well as the residue.

2. Use $Res(f(z), z_k) = \dfrac{1}{(n-1)!} \lim_{z \to z_k} \dfrac{d^{n-1}}{dz}(z - z_k)^n f(z)$ to find the residues for all the poles of $f(z) = \dfrac{1}{(z^2+1)^3}$.