

SOLUTION TO QUIZ 3

MATH 241

Calculate

$$\int_C z e^{-z^2} dz, \text{ where } C \text{ is the straight segment from } 1 \text{ to } 2 + i$$

Proof. The antiderivative is $-\frac{e^{-z^2}}{2}$, so $\int_C z e^{-z^2} dz = -\frac{e^{-z^2}}{2} \Big|_1^{2+i} = -\frac{e^{-(2+i)^2}}{2} + \frac{e^{-1}}{2} = \frac{e^{-1} - e^{-3} \cos 4 + i e^{-3} \sin 4}{2}$ \square