

MTH 317/617

Quiz #6

1. Let  $\gamma$  be the piece of the circle in the complex plane connecting  $z = i$  to  $z = -1$ .

(a) Find a parametrization for  $\gamma$ .

$$z(t) = e^{it}, t \in [\pi/2, \pi]$$

(b) Compute  $\int_{\gamma} e^z dz$ .

$$\int_{\gamma} e^z dz = e^z \Big|_i^{-1} = e^{-1} - e^i$$

(c) Compute  $\int_{\gamma} |z| dz$ .

$$z'(t) = ie^{it}$$
$$\Rightarrow \int_{\gamma} |z| dz = \int_{\pi/2}^{\pi} ie^{it} dt = e^{i\pi} - e^{i\pi/2} = -1 - i.$$