

Name: _____

Please show all work and explain your answers.

1. Integrate $\frac{\cos z dz}{z(z^2 + 4)}$ around the circle of radius 2 centered at $-i$.
2. Integrate $\frac{e^{z^2} dz}{z^3}$ around the same circle as above.
3. Integrate \bar{z} along the straight line segment from 1 to i .
4. Suppose $f: \mathbf{C} \rightarrow \mathbf{C}$ is entire and the real part $\Re[f(z)] > 0$ for all $z \in \mathbf{C}$. What can you conclude about f ? Prove your assertion. Cite any theorems you use in your proof.

1	2	3	4	total (40)	%

Prelim. course grade: %