

Sample 3146 Questions

1. Express $e^{2+\pi i}$ in standard form (if it is multiple valued, include all values in your answer)
2. Compute $P.V. \int_{-\infty}^{\infty} \frac{x dx}{(x^2 + 2x + 2)^2}$.
3. Compute $\int_C \text{Log}(z) dz$ for C the negatively oriented circle of radius 2.
4. Compute the z^n terms for $n = -3, -2, -1, 0, 1, 2, 3$ in the Laurent series for $f(z) = \frac{e^z}{2-z}$ in the circle $|z| < 2$.
5. Write $(2+i)\overline{(1-i)}$ in standard form.
6. Write $\frac{1}{2} - \frac{\sqrt{3}}{2}i$ in exponential form.
7. True/False: $\text{Log}(z)$ is an entire function.
8. Sketch the region $0 < \arg(z) < \pi$ in the complex plane. State if it is a domain and if it is bounded.
9. Does there exist an entire function $f(z)$ with $\text{Re}(f(z)) = \sin(x)\sin(y)$? If so, find such a function.
10. Compute $\int_C e^{1/z} dz$ where C is the positively oriented square with vertices $1+i, 1-i, -1-i, -1+i$.