Homework 4
Theory of a Complex Variable Functions
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İTÜ

QUESTIONS

1. Find the Laurent series for

   (a) $f(z) = \frac{1}{z-2i}$ about $z_0 = 0$

   (b) $f(z) = \frac{1}{(z-2)(z-3)}$ about $z = 2$

   (c) $f(z) = \frac{z}{(z-2)(z-3)}$ for $2 < |z| < 3$

   (d) $f(z) = \frac{1}{z^2(z+2)}$ about $z_0 = -2$

   (e) $f(z) = \frac{z^2+z(2i+1)-1}{z(z-i)^2(z+i)^2}$ about $z_0 = i$

2. Find the Laurent series for $f(z) = \frac{1}{z^2(1-z)}$ for

   (a) $0 < |z| < 1$

   (b) $1 < |z| < \infty$

3. Find the Laurent series for $f(z) = \frac{1}{z(1+z^2)}$ for

   (a) $0 < |z| < 1$

   (b) $1 < |z| < \infty$