



Math for the people, by the people.

real and imaginary parts of contour integral

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If $f(z)$ is continuous on the contour γ of the complex plane and

$$z = x+iy \quad (x, y \in \mathbb{R}), \quad \Re f(z) = u(x, y), \quad \Im f(z) = v(x, y),$$

then the contour integral of $f(z)$ along γ may be expressed via two real path integrals as

$$\int_{\gamma} f(z) dz = \int_{\gamma} (u dx - v dy) + i \int_{\gamma} (v dx + u dy).$$