

1. Evaluate the integral in two different ways (a) directly, (b) by rewriting the integral as the sum of the integrals of the real and imaginary part of the integrand.

$$\int_0^{\pi/2} e^{(1+2i)t} dt$$

2. Evaluate each integral

(a) $\int_0^1 \frac{dt}{t-i}$

(b) $\int_0^\pi \sin(t+i) dt$

3. Do problem # 7 on page 116.

4. Let $f(z) = \bar{z}$. Evaluate $\int_C f(z) dz$ for the following contour C .

(a) $z = e^{i\theta}, \quad \frac{\pi}{2} \leq \theta \leq \frac{3\pi}{2}$

- (b) C is the closed contour $C_1 + C_2 + C_3$ where

$C_1 : y = x^2$, from $(0,0)$ to $(1,1)$

C_2 : the line segment from $(1,1)$ to $(2,0)$

C_3 : part of the x-axis from $(2,0)$ to $(0,0)$