

(1) Find parameterizations of:

(a) The line segment from $1 + 2i$ to $-1 - 3i$.

(b) The upper semicircle of radius 3 around the point $2 + 4i$.

(2) Is the curve below oriented positively or negatively?



(3) Parameterize the barbell shaped contour of problem #9 in section 4.1, but in the opposite direction from that shown.

(4) Compute the following integrals:

(a) $\int_0^2 (4t + 3it^3) dt$

(b) $\int_0^1 \frac{3t}{(t^2 + i)^3} dt$

(c) $\int_{-1/2}^{1/2} \frac{1}{(1 - t^2)^{1/2}} dt$

(5) Evaluate the contour integral $\int_{\Gamma}(4z + 1)dz$ when Γ is:

(a) The line segment from 1 to i .

(b) The counterclockwise arc on the unit circle centered at 0 from 1 to i .

(6) Prove that $|\int_{\Gamma}(\text{Log}(z))^2 dz| \leq \frac{\pi^3}{8}$ if Γ is the counterclockwise arc on the unit circle centered at 0 from 1 to i .