Panel 1

Complex HW

(1) Find an example of a function $z(t) = x(t) + iy(t)$ for which

a) the Mean Value Theorem for differentiation does not hold

b) the Mean Value Theorem for integration does not hold

Hint: try $z(t) = e^{it}$ with $t \in [-\pi, \pi]$

(2) Find a parametrization for the paths:

a) line segment from $-1+i$ to $2-i$

b) left half of a circle of radius 2, centered at $1+2i$

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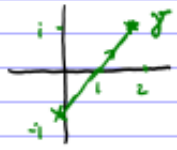
Panel 2

(3) Evaluate $\int_\gamma 2z^2\,dz$



(4) Suppose γ is the standard, pos. oriented unit circle. Compute:

a) $\int_\gamma z^5\,dz$

b) $\int_\gamma \bar{z}\,dz$

c) $\int_\gamma \frac{1}{z^3}\,dz$

d) $\int_\gamma \frac{1}{z}\,dz$

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