

Homework III

➤ **Section 14.1**

Find and sketch the path and its orientation given by :

2) $z(t) = 5 - 2i * t \quad (-3 \leq t \leq 3)$

Sketch and represent parametrically:

14) Semi-ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1, y \geq 0$

15) Parabola $y = 4 - 4x^2, (-1 \leq x \leq 1)$

Integrate by the first method or state why it does not apply and then use the second method.

19) $\oint_C \operatorname{Re}(z) dz$, C the shortest path from 0 to $1+i$

20) $\oint_C \operatorname{Re}(z) dz$, C the parabola $y = x^2$ from 0 to $1+i$

26) $\oint_C \bar{z} dz$, C from $-1+i$ along the parabola $y = x^2$ to $1+i$

➤ **Section 14.2**

Integrate $f(z)$ counterclockwise (CCW) around the unit circle indicating whether Cauchy's integral theorem applies.

2) $f(z) = 1/(3z - i\pi)$

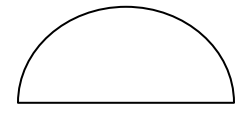
6) $f(z) = \sec(z/2)$

8) $f(z) = 1/(4z - 3)$

Evaluate (showing the details and using partial fractions if necessary)

19) $\oint_C \frac{1}{2z - i} dz$, C the circle $|z|=3$ (CCW)

21) $\oint_C \operatorname{Re}(2z) dz$, C the semi-circle (CCW) \longrightarrow



-1 1

22) $\oint_C \frac{7z - 6}{z^2 - 2z} dz$, C (CCW) is

