

Name: \_\_\_\_\_

**§14.4-14.8 INDEPENDENCE OF PATH, GREEN'S THEOREM, DIVERGENCE, CURL**

1. Show that the line integral  $\int_C 5x^4y dx + (x^5 - 8) dy$  is independent of path.

2. Use Green's Theorem to evaluate  $\oint_C xe^{4x} dx - 6x^3y dy$ , where  $C$  is the rectangular path from  $(0,0)$  to  $(6,0)$  to  $(6,4)$  to  $(0,4)$ .

MAT272 RECITATION - HOMEWORK 14

3. Use Green's Theorem to evaluate  $\oint_C (xy - 6e^{4x}) dx - (5x^2 - 3y^5) dy$ , where  $C$  is the clockwise-oriented curve bounded by  $y = x^2$  and  $y = 7 - x^2$ .

4. Find the curl of  $\mathbf{F} = \langle 5xe^5, yz^3, 9x + 3y \rangle$ .

5. Find the divergence of  $\mathbf{F} = \langle 7yz, x^5, x \cos(5y) \rangle$ .

6. Determine whether  $\mathbf{F} = \langle 8x, 30y^5z^5, 25y^6z^4 \rangle$  is conservative and/or incompressible.