Preface

Here are a set of problems for my Calculus II notes. These problems do not have any solutions available on this site. These are intended mostly for instructors who might want a set of problems to assign for turning in. I try to put up both practice problems (with solutions available) and these problems at the same time so that both will be available to anyone who wishes to use them.
Green’s Theorem

1. Use Green’s Theorem to evaluate \[ \int_C (yx^2 - y) \, dx + (x^3 + 4) \, dy \] where \( C \) is shown below.

2. Use Green’s Theorem to evaluate \[ \int_C (7x + y^2) \, dy - (x^2 - 2y) \, dx \] where \( C \) is the two circles as shown below.

3. Use Green’s Theorem to evaluate \[ \int_C (y^2 - 6y) \, dx + (y^3 + 10y^2) \, dy \] where \( C \) is shown below.
4. Use Green’s Theorem to evaluate \( \int_C xy^2 \, dx + (1 - xy^3) \, dy \) where \( C \) is shown below.

5. Use Green’s Theorem to evaluate \( \oint_C (y^2 - 4x) \, dx - (2 + x^3 y^2) \, dy \) where \( C \) is shown below.
6. Use Green’s Theorem to evaluate $\int_C (y^3 - xy^2) \, dx + (2 - x^3) \, dy$ where $C$ is shown below.

7. Verify Green’s Theorem for $\int_C (6 + x^2) \, dx + (1 - 2xy) \, dy$ where $C$ is shown below by (a) computing the line integral directly and (b) using Green’s Theorem to compute the line integral.
8. Verify Green’s Theorem for \( \int_C \left( 6y - 3y^2 + x \right) dx + yx^3 dy \) where \( C \) is shown below by (a) computing the line integral directly and (b) using Green’s Theorem to compute the line integral.