WebAssign
Hw 30 (16.4): Green's Theorem (Homework)

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MA 261 Fall 2012, section 121, Fall 2012
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Current Score : 20 / 20 **Due :** Tuesday, November 13 2012 11:00 PM EST

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1. 2.85/2.85 points | Previous Answers SCalcET7 16.4.001.MI.

Evaluate the line integral by the two following methods.

$$\oint (x - y)\,dx + (x + y)\,dy$$

C is counterclockwise around the circle with center the origin and radius 9

(a) directly

(b) using Green's Theorem

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2. 2.85/2.85 points | Previous Answers SCalcET7 16.4.002.

Evaluate the line integral by the two following methods.

$$\oint xy\,dx + x^2\,dy$$

C is counterclockwise around the rectangle with vertices (0, 0), (5, 0), (5, 3), (0, 3)

(a) directly

37.5

(b) using Green's Theorem

37.5

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3. 2.85/2.85 points | Previous Answers SCalcET7 16.4.003.

Evaluate the line integral by the two following methods.

$$\oint xy\,dx + x^2y^3\,dy$$

C is counterclockwise around the triangle with vertices (0, 0), (1, 0), and (1, 2)

(a) directly

2/3 ✔

(b) using Green's Theorem

2/3 ✔

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4. 2.85/2.85 points | Previous Answers SCalcET7 16.4.005.

Use Green's Theorem to evaluate the line integral along the given positively oriented curve.

$$\int_C xy^2\,dx + 4x^2y\,dy$$

C is the triangle with vertices (0, 0), (2, 2), and (2, 4)

36 ✔

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5. 2.85/2.85 points | Previous Answers SCalcET7 16.4.011.

Use Green's Theorem to evaluate $\int_C \mathbf{F} \cdot d\mathbf{r}$. (Check the orientation of the curve before applying the theorem.)

$\mathbf{F}(x, y) = \langle y \cos x - xy \sin x, xy + x \cos x \rangle$, C is the triangle from (0, 0) to (0, 6) to (3, 0) to (0, 0)

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6. 2.85/2.85 points | Previous Answers SCalcET7 16.4.013.

Use Green's Theorem to evaluate $\int_C \mathbf{F} \cdot d\mathbf{r}$. (Check the orientation of the curve before applying the theorem.)

$\mathbf{F}(x, y) = \langle y - \cos y, x \sin y \rangle$, C is the circle $(x - 6)^2 + (y + 2)^2 = 9$ oriented clockwise

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7. 2.9/2.9 points | Previous Answers SCalcET7 16.4.018.

A particle starts at the point $(-1, 0)$, moves along the x-axis to $(1, 0)$, and then along the semicircle $y = \sqrt{1 - x^2}$ to the starting point. Use Green's Theorem to find the work done on this particle by the force field $\mathbf{F}(x, y) = \langle 8x, x^3 + 3xy^2 \rangle$.

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