WebAssign
Hw 36 (16.8): Stokes' Theorem (Homework)

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MA 261 Fall 2012, section 121, Fall 2012
Instructor: David Daniels

Current Score : 20 / 20 **Due :** Thursday, November 29 2012 11:00 PM EST

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1. 4/4 points | Previous Answers SCalcET7 16.8.002.MI.

Use Stokes' Theorem to evaluate $\iint_S \text{curl } \mathbf{F} \cdot d\mathbf{S}$.

$\mathbf{F}(x, y, z) = 6y \cos z\, \mathbf{i} + e^x \sin z\, \mathbf{j} + xe^y\, \mathbf{k}$,
S is the hemisphere $x^2 + y^2 + z^2 = 9$, $z \geq 0$, oriented upward.

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2. 4/4 points | Previous Answers SCalcET7 16.8.003.

Use Stokes' Theorem to evaluate $\iint_S \text{curl } \mathbf{F} \cdot d\mathbf{S}$.

$\mathbf{F}(x, y, z) = x^2z^2\mathbf{i} + y^2z^2\mathbf{j} + xyz\mathbf{k}$,
S is the part of the paraboloid $z = x^2 + y^2$ that lies inside the cylinder $x^2 + y^2 = 25$, oriented upward.

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3. 4/4 points | Previous Answers SCalcET7 16.8.005.

Use Stokes' Theorem to evaluate $\iint_S \text{curl } \mathbf{F} \cdot d\mathbf{S}$.

$\mathbf{F}(x, y, z) = xyz\mathbf{i} + xy\mathbf{j} + x^2yz\mathbf{k}$,
S consists of the top and four sides (but not the bottom) of the cube with vertices (± 10, ± 10, ± 10), oriented outward.

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4. 4/4 points | Previous Answers SCalcET7 16.8.007.MI.

Use Stokes' Theorem to evaluate $\int_C \mathbf{F} \cdot d\mathbf{r}$ where C is oriented counterclockwise as viewed from above.

$\mathbf{F}(x, y, z) = (x + y^2)\mathbf{i} + (y + z^2)\mathbf{j} + (z + x^2)\mathbf{k}$,
C is the triangle with vertices (5, 0, 0), (0, 5, 0), and (0, 0, 5).

−125 ✔

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5. 4/4 points | Previous Answers SCalcET7 16.8.009.

Use Stokes' Theorem to evaluate $\int_C \mathbf{F} \cdot d\mathbf{r}$ where C is oriented counterclockwise as viewed from above.

$\mathbf{F}(x, y, z) = yz\mathbf{i} + 5xz\mathbf{j} + e^{xy}\mathbf{k}$,
C is the circle $x^2 + y^2 = 9$, $z = 2$.

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