Box #_____
Math 60 Section 1
Homework 12
31 May 2018

Collaborators:

Colley 7.3 #4 Verify Stokes's Theorem for S which is defined by $x^2 + y^2 + z^2 = 4$, $z \leq 0$, oriented by downward normal and

$$\mathbf{F} = (2y - z)\mathbf{i} + (x + y^2 - z)\mathbf{j} + (4y - 3x)\mathbf{k}.$$

$\blacksquare$

Colley 7.3 #6 Verify Gauss's Theorem for

$$\mathbf{F} = x\mathbf{i} + y\mathbf{j} + z\mathbf{k}.$$

$$D = \left\{(x, y, z) | 0 \leq z \leq 9 - x^2 - y^2\right\}.$$

$\blacksquare$

Colley 7.4 T/F #6 If S is the unit sphere centered at the origin, then

$$\iint_S x^3 \, dS = 0.$$

$\blacksquare$

Colley 7.4 T/F #10

$$\iint_S (-y\mathbf{i} + x\mathbf{j}) \cdot d\mathbf{S} = 0,$$

where S is the cylinder $x^2 + y^2 = 9$, $0 \leq z \leq 5$.

■

Colley 7.4 #18

$$\iint_S \nabla \times \mathbf{F} \cdot d\mathbf{S}$$

has the same value for all piecewise smooth, oriented surfaces S that have the same boundary curve C.

$\blacksquare$