1. Verify that Stokes' Thm is satisfied if $\overline{F} = \langle y, xz, x^2 \rangle$ and S is the triangle cut by $x + y + z = 1$ in the first octant.

2. Use Stokes' Thm to evaluate $\iint_S (\nabla \times \overline{F}) \cdot \overline{n}\, dS$ if $\overline{F} = \langle y, -x, x^3 y^2 z \rangle$ and S is the surface described by $x^2 + y^2 + z^2 = 1$ and $z \le 0$

3. Use Stokes' Thm to evaluate $\oint_C \overline{F} \cdot d\overline{r}$ if $\overline{F} = \langle z, x, 2xz + 2yz \rangle$ and S is the surface described by $z = 1 - x^2 - y^2$ where $z \ge 0$

4. Use the Divergence Thm to evaluate $\iint_S \overline{F} \cdot \overline{n}\, dS$ if

   $\overline{F} = \left\langle x^2 + \cosh(yz^3), y - \tan^{-1} \dfrac{z}{(x-5)^2}, z^2 + \ln\left(2x + \sqrt{1 + 3y^3}\right) \right\rangle$ and S is the surface determined by the portion of $x^2 + y^2 = 4$ bounded above by $y + z = 2$, and bounded below by $z = 0$

5. Verify the Divergence Thm with $\overline{F} = \langle x, y, z \rangle$ and S is the surface described by $x^2 + y^2 + z^2 = a^2$