

Part II.	Name:
<p>6. Let $\mathbf{F} = 4y^2\mathbf{i} + (3z^2 - e^{y^2})\mathbf{j} + (x^2 - 4)\mathbf{k}$. Compute:</p> <p>a) $\nabla \times \mathbf{F}$</p> <p style="text-align: right;">Ans: _____.</p>	<p>b) $\nabla \cdot (\nabla \times \mathbf{F})$</p> <p style="text-align: right;">Ans: _____.</p>
<p>7. Find $\int_S dS$, where S is the part of the surface $x = y^2 + z^2$ bounded by the cylinder $y^2 + z^2 = 9$.</p> <p style="text-align: right;">Ans: _____.</p>	
<p>8. Identify the surfaces:</p> <p>a) $\mathbf{r}(u, v) = u\mathbf{i} + (u^2 + v^2)\mathbf{j} + v\mathbf{k}$</p> <p style="text-align: right;">Ans: _____.</p>	<p>b) $\mathbf{r}(u, v) = (u \cosh v)\mathbf{i} + u^2\mathbf{j} + (u \sinh v)\mathbf{k}$</p> <p style="text-align: right;">Ans: _____.</p>
<p>9. Find $\int_C \mathbf{F} \cdot d\mathbf{r}$, where $\mathbf{F} = (y^3 + 3z)\mathbf{i} + (x^3 - 3z)\mathbf{j} + (z^3 + 3y)\mathbf{k}$ and C is the boundary of the hemisphere $x = \sqrt{16 - y^2 - z^2}$.</p> <p style="text-align: right;">Ans: _____.</p>	
<p>10. Find $\int_S \mathbf{F} \cdot d\mathbf{S}$, where $\mathbf{F} = (6xz^3)\mathbf{i} + (2y^3z)\mathbf{j} + (3x^2z^2)\mathbf{k}$ and S is the surface of the solid bounded by $z = \sqrt{4 - x^2 - y^2}$ and $z = 0$</p> <p style="text-align: right;">Ans: _____.</p>	
<p>Extra space</p>	