Fake Quiz 1 Calc 3 11/22/2013

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1. Compute $\int_C \left(x^2 + y^2\right) dx - x\,dy$ along the quarter circle from (1,0) to (0,1).

2. Evaluate $\iint_S \nabla \times \mathbf{F} \cdot \mathbf{n}\, d\sigma$ for the hemisphere S: $x^2 + y^2 + z^2 = 9$, $z \geq 0$ and the field $\mathbf{F} = y\mathbf{i} - x\mathbf{j}$.

3. Evaluate $\int \left(\sin y \sinh x + \cos y \cosh x\right) dx + \left(\cos y \cosh x - \sin y \sinh x\right) dy$ where C is the line segment from (1,0) to $(2,\pi/2)$.

4. Evaluate $\iint_S \mathbf{F} \cdot \mathbf{n} dS$, where $\mathbf{F}(x,y,z) = 4x\mathbf{i} - 3y\mathbf{j} + 7z\mathbf{k}$ and S is the surface of the cube bounded by the coordinate planes and the planes $x = 1$, $y = 1$, and $z = 1$.

5. Evaluate , $\iint_S \mathbf{F} \cdot \mathbf{n} dS$ where $\mathbf{F}(x,y,z) = x\,\mathbf{i} + y\,\mathbf{j} + 2z\,\mathbf{k}$ and S is the portion of the cone $z^2 = x^2 + y^2$ between the planes $z = 1$ and $z = 2$, oriented upwards.

6. Evaluate $\int_C \left(x^2 - y\right) dx + x\,dy$, where C is the circle $x^2 + y^2 = 4$ with counterclockwise orientation.

7. Evaluate $\iint_S \left\langle x^3, x^2 y, xy \right\rangle \cdot d\mathbf{S}$, where S is the surface of the solid bounded by $z = 4 - x^2$, $y + z = 5$, $z = 0$, and $y = 0$.

8. Compute $\int_C \mathbf{F} \cdot d\mathbf{r}$ where $\mathbf{F}(x,y,z) = y\,\mathbf{i} + z\,\mathbf{j} - x\,\mathbf{k}$ and C is the line segment from (1,1,1) to (-3,2,0).

9. Compute $\displaystyle\int_C \left\langle \ln\left(1 + y\right), -\frac{xy}{1+y} \right\rangle \cdot d\mathbf{r}$ where C is the triangle with vertices (0,0), (2,0), and (0,4).

10. Evaluate $\displaystyle\int_{(0,1)}^{(\pi,-1)} y \sin x\, dx - \cos x\, dy$.

11. Compute , $\iint_S \mathbf{F} \cdot \mathbf{n} dS$ where $\mathbf{F}(x,y,z) = 2y\,\mathbf{j} + \mathbf{k}$ and S is the portion of the paraboloid $z = x^2 + y^2$ below the plane $z = 4$ with positive orientation.

12. Compute $\int_C \mathbf{F} \cdot d\mathbf{r}$ where $\mathbf{F}(x,y,z) = \langle 4x, 7y, -3z \rangle$ and C is the boundary of the first-octant portion of a sphere with radius 5 (centered at the origin).

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3. Evaluate $\int (\sin y\sinh x+\cos y\cosh x)\,dx+(\cos y\cosh x-\sin y\sinh x)\,dy$ where C is the line segment from (1,0) to $(2,\pi/2)$.

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2. Evaluate $\iint_S \nabla\times\mathbf{F}\cdot\mathbf{n}\,d\sigma$ for the hemisphere S: $x^2+y^2+z^2=9$, $z\geq 0$ and the field $\mathbf{F}=y\mathbf{i}-x\mathbf{j}$.

3. Evaluate $\int \left(\sin y\sinh x+\cos y\cosh x\right)dx+\left(\cos y\cosh x-\sin y\sinh x\right)dy$ where C is the line segment from (1,0) to $(2,\pi/2)$.

4. Evaluate $\iint_S \mathbf{F}\cdot\mathbf{n}dS$, where $\mathbf{F}(x,y,z) = 4x\mathbf{i} - 3y\mathbf{j} + 7z\mathbf{k}$ and S is the surface of the cube bounded by the coordinate planes and the planes $x = 1$, $y = 1$, and $z = 1$.

5. Evaluate , $\iint_S \mathbf{F}\cdot\mathbf{n}dS$ where $\mathbf{F}(x,y,z) = x\,\mathbf{i} + y\,\mathbf{j} + 2z\,\mathbf{k}$ and S is the portion of the cone $z^2 = x^2 + y^2$ between the planes $z = 1$ and $z = 2$, oriented upwards.

6. Evaluate $\int_C \left(x^2-y\right)dx+x\,dy$, where C is the circle $x^2+y^2=4$ with counterclockwise orientation.

7. Evaluate $\iint_S \left\langle x^3,x^2y,xy\right\rangle\cdot d\mathbf{S}$, where S is the surface of the solid bounded by $z = 4 - x^2$, $y + z = 5$, $z = 0$, and $y = 0$.

8. Compute $\int_C \mathbf{F}\cdot d\mathbf{r}$ where $\mathbf{F}(x,y,z) = y\,\mathbf{i} + z\,\mathbf{j} - x\,\mathbf{k}$ and C is the line segment from (1,1,1) to (-3,2,0).

9. Compute $\int_C \left\langle \ln\left(1+y\right),-\frac{xy}{1+y}\right\rangle\cdot d\mathbf{r}$ where C is the triangle with vertices (0,0), (2,0), and (0,4).

10. Evaluate $\int_{(0,1)}^{(\pi,-1)} y\sin x\,dx-\cos x\,dy$.

11. Compute , $\iint_S \mathbf{F}\cdot\mathbf{n}dS$ where $\mathbf{F}(x,y,z) = 2y\,\mathbf{j} + \mathbf{k}$ and S is the portion of the paraboloid $z = x^2 + y^2$ below the plane $z = 4$ with positive orientation.

12. Compute $\int_C \mathbf{F}\cdot d\mathbf{r}$ where $\mathbf{F}(x,y,z) = \langle 4x, 7y, -3z\rangle$ and C is the boundary of the first-octant portion of a sphere with radius 5 (centered at the origin).