Math 203 - Calculus III
Quiz 1- 2009

1. Let $\overrightarrow{A} = \langle 3, 2, -1 \rangle$, $\overrightarrow{B} = \langle -2, 0, 3 \rangle$. Find the unit vector in the direction of of $\overrightarrow{B} \times \overrightarrow{A}$.

2. Use cross product to find the angle between the vectors $\overrightarrow{A} = 3\mathbf{i} + \mathbf{k}$ and $\overrightarrow{B} = 4\mathbf{j} + \mathbf{k}$.

3. Find the distance from the point $Q = (1, 3, 1)$ to the line through $(1, 3, -2)$ and $(1, 0, -2)$.

Math 203 - Calculus III
Quiz 2- 2009

1. For the planes $x - 2y + z = 0$ and $2x + 3y - 2z = 0$
   (a) Find the angle between them.
   (b) Find parametric equations of their line of intersection.
2. Find the equation of the plane containg the points $(2, 1, 1), (0, 4, 1)$, and $(-2, 1, 4)$.

Math 203 - Calculus III
Quiz 3- , 2009

Find the minimum and maximum values of $f(x, y) = x + 2y$ subject to the constraint $x^2 + y^2 = 1$

MTH 203-Quiz 4
2009

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1. Graph the region, switch the integral and compute $\int_0^1 \int_{\sqrt{x}}^1 \frac{3}{4+y^3}\, dy\, dx$.

2. Set up (don't compute) a double integral for the volume bounded by $z = \sqrt{4 - x^2 - y^2}$ inside $x^2 + y^2 = 1$ in the first octant.

MTH 203-Quiz 5

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1. Compute $\int_R x\, dA$ where R is the annular region lying between $x^2+y^2 = 1$ and $x^2 + y^2 = 4$.

2. Find the surface area of the portion bounded by $z = \sqrt{25 - x^2 - y^2}$ that lies above the region bounded by the circle $x^2 + y^2 = 9$.

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MTH 203-Quiz 6, 2009

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1. Convert to cylindrical and **compute**: $\int_{-2}^{2}\int_{-\sqrt{4-x^2}}^{\sqrt{4-x^2}}\int_{x^2+y^2}^{4} x\ dz\ dy\ dx$.

2. **Set up a formula** (don't compute) for the volume of the solid that lies between the spheres $x^2+y^2+z^2=1$ and $x^2+y^2+z^2=2$ and inside the cone $z=\sqrt{x^2+y^2}$.

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MTH 203-Quiz 7, 2009

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1. Evaluate $\int_C (x^2 - y + 3z)\, ds$ where C is the line segment from $(0, 0, 0)$ to $(1, 2, 1)$.

2. Evaluate $\int_C y\, dx + x^2\, dy$ where C is the parabola $y = 4x - x^2$ from $(4, 0)$ to $(1, 3)$.

3. Find the work done by the force field $\mathbf{F}(x, y) = xy\mathbf{i} + y\mathbf{j}$ in moving a particle along the curve $\mathbf{r}(t) = 4t\mathbf{i} + t\mathbf{j}$, $0 \leq t \leq 1$.

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MTH 203-Quiz 8, 2009

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1. Use Green's Theorem to evaluate $\int_C \ y^3 \ dx \ +(x^3+3xy^2)dy$ where C is the path from $(0,0)$ to $(1,1)$ along the graph $y=x^3$ and from $(1,1)$ along the graph $y=x$.

2. Use Green's Theorem to find the area of the region bounded by the graphs of $y=2x+1$ and $y=4-x^2$.

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