

Name: _____ VIP ID: _____
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- Write your name and VIP ID in the space provided above.
- The test has three (3) pages, including this one.
- The test is fifty (50) minutes long.
- Enter your answer in the boxes provided.
- You must show sufficient work to justify all answers unless otherwise stated in the problem.
Correct answers with inconsistent work may not be given credit.
- Credit for each problem is given in parentheses at the right of the problem number.
- No books, notes or calculators may be used on this test.

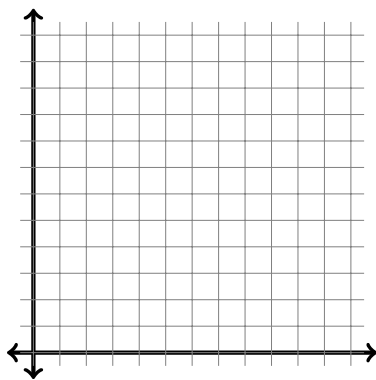
Page	Max. points	Your points
2	50	
3	50	
Total	100	

Problem 1 (25 pts). Evaluate $\int_R (3x + 4y^2) dA$, where R is the region in the upper half-plane bounded by the circles $x^2 + y^2 = 1$ and $x^2 + y^2 = 4$.

$$\int_R (3x + 4y^2) dA =$$

Problem 2 (25 pts). Sketch the region of integration and reverse the order of integration. **Do not evaluate the integral.**

$$\int_0^{1/8} \int_{y^{1/3}}^{1/2} \cos(8\pi x^4) dx dy$$



$$\int_0^{1/8} \int_{y^{1/3}}^{1/2} \cos(8\pi x^4) dx dy =$$

Problem 3 (20 pts). Calculate the double integral $\int_R \frac{1+x^2}{1+y^2} dA$, for the rectangle $R = [0, 1] \times [0, 1]$.

$$\int_R \frac{1+x^2}{1+y^2} dA =$$

Problem 4 (30 pts). Use a double or a triple integral (your choice!) to compute the volume of the tetrahedron with vertices at $(0, 0, 0)$, $(1, 0, 0)$, $(0, 2, 0)$ and $(0, 0, 5)$.

$$V = \iint_D f(x, y) dA = \iiint_R dV =$$