

MATH 2242-090 — Spring 2016 — Dr. Clontz — Quiz 9

Name: _____

- Each quiz question is labeled with its worth toward your total quiz grade for the semester.
- On multiple choice problems, you do not need to show your work. No partial credit will be given.
- On full response problems, show all of your work and give a complete solution. When in doubt, don't skip any steps. Partial credit will be given at the discretion of the professor.
- This quiz is open notes and open book.
- This quiz is due at the end of class. Quizzes submitted over one minute late will be penalized by 50%.

1. (10 points) The affine transformation $\mathbf{T}(u, v) = (4u + 2v + 1, u + 2v + 3)$ transforms the unit triangle with vertices $(0, 0), (1, 0), (1, 1)$ in the uv plane into the triangle R with vertices $(1, 4), (4, 5), (5, 7)$ in the xy plane. Compute $\iint_R x - y \, dA$.

2. (10 points) Which of these iterated integrals gives the volume of a cone of height $\sqrt{3}$ and radius 1? (Hint: Draw the cone with its tip at the origin and the center of its base on the positive z axis.)

☐ $\int_{-1}^1 \int_{-\sqrt{1-x^2}}^{\sqrt{1-x^2}} \int_{\sqrt{3x^2+3y^2}}^{\sqrt{3}} 1 \, dz dy dx$

☐ $\int_0^{2\pi} \int_0^1 \int_{\sqrt{3}r}^{\sqrt{3}} r \, dz dr d\theta$

☐ $\int_0^{2\pi} \int_0^{\pi/6} \int_0^{\sqrt{3}\sec\phi} \rho^2 \sin\phi \, d\rho d\phi d\theta$

☐ All of these

☐ None of these