Math2210 Quiz 12 (Sections 14.2-14.3)   Summer, 2008   Dylan Zwick

Name _____ Date _____

<u>Instructions</u>: Please show all of your work as partial credit will be given where appropriate, **and** there may be no credit given for problems where there is no work shown. All answers should be completely simplified, unless otherwise stated.

1. (10 points) Determine whether $F(x,y)=(-e^{-x}\ln y)i+(e^{-x}y^{-1})j$ is conservative. If so, find f such that $F=\nabla f$. If not, state that F is not conservative.

Conservative: True   or   False   (circle one)

If conservative, f = _____

2. *(10 points)* Show that the line integral is independent of path and then evaluate it.

$$\int_{(0,0,0)}^{(\pi,\pi,0)} (\cos x + 2yz)\,dx + (\sin y + 2xz)\,dy + (z + 2xy)\,dz$$

Prove independence of path:

Evaluate integral:

Answer_____

3. *(10 points)* Evaluate the line integral $\int_C xz\,dx + (y+z)\,dy + x\,dz$ where C is the curve $x=e^t, y=e^{-t}, z=e^{2t}$ and t goes from 0 to 1.

Answer: _____

4. *(10 points)* (True or False)

T   or   F (circle one)   There are 8 possible orders of integration for a triple integral.

T   or   F (circle one)   The cross product of two unit vectors is another unit vector.

T   or   F (circle one)   2+2 = 4