Math 241H - Section 0301 - Fall 2017 Name:_____
Quiz 13-Review

You have all class to comlpete this. You may work in groups.

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1. (a) **[1pt]** Evaluate the integral

$$\int_0^{\sqrt{\pi}} \int_y^{\sqrt{\pi}} \sin(x^2)\,\mathrm{d}x\mathrm{d}y.$$

   (b) **[1pt]** Set up an iterated polar integral for $\iint_R xy\mathrm{d}A$, where R is the region inside the circle $r = 2\sin\theta$ and above $y = 1$. Do not evaluate.

2. **[3pts]** Evaluate

$$\iint_R 3xy\,\mathrm{d}A$$

where R is region bounded by the curves $x + 3y = 1$, $x + 3y = 3$, $x - y = 1$ and $x - y = -1$.

3. (a) **[1pt]** Let D the solid region inside the cone $z = \sqrt{3(x^2 + y^2)}$, outside of $x^2 + y^2 + z^2 = 4$ and below $z = 6$. Write the integral $\iiint_D zy \, \mathrm{d}V$ as a triple iterated integral in spherical coordinates. Do not evaluate.

   (b) **[1pt]** Let D be the region in the first octant which is below the plane $x + 2y + 3z = 6$. Write the integral $\iiint_D xy \, \mathrm{d}V$ as a triple iterated integral in rectangular coordinates. Do not evaluate.

4. **[3pts]** Find the volume of the region D bounded above by the sphere $x^2 + y^2 + z^2 = 2$ and below by the paraboloid $z = x^2 + y^2$.