

## Repeated Integration M408D Worksheet

by Laura Hitt

1.  $\iint_{\Omega} (4 - y^2) dx dy$ ,  $\Omega$  the bounded region between  $y^2 = 2x$  and  $y^2 = 8 - 2x$

2.  $\iint_{\Omega} e^{-y^2/2} dx dy$ ,  $\Omega$  the triangle formed by  $y$ -axis,  $2y = x$ , and  $y = 1$

3. Let  $f(x) = \begin{cases} 2x^2 - e^x, & -30 \leq x \leq 20 \text{ and } x \text{ not an integer.} \\ x + 3, & x \text{ is an integer.} \end{cases}$

Does  $\int_{-30}^{20} f(x) dx$  exist? Why or why not?

4. Is the number of elements in  $\{x \text{ real number}\} >$  or  $<$   $\{x \text{ an integer}\}$ ?  
Why? What does this tell you about the “size” of infinity?