1. $\int\int_D e^x y^3 dA$
   $D =$
   - $x = y^4$
   - $x = 1$

   $\Rightarrow$
   - $0 \leq x \leq y^4$
   - $0 \leq y \leq 1$

   $\int_0^1 (\int_0^{y^4} e^x y^3 dx) dy$
   - $\int_0^{y^4} e^x y^3 dx =$
     $e^{y^4} y^3 - y^3$
   - $\int_0^1 e^{y^4} y^3 - y^3 dy =$
     $\int e^{y^4} y^3 dy$
     $u = y^4 \wedge du = 4y^3 dy \Rightarrow dy = \frac{du}{4y^3} \Rightarrow$
     $\int \frac{e^u}{4} du = \frac{1}{4} e^u + C = \frac{e^{y^4}}{4} + C \Rightarrow$
     $\int_0^1 e^{y^4} y^3 - y^3 dy \overset{Barrow}{=}$
     $\frac{e^{y^4}}{4} - \frac{y^4}{4}\Big|_0^1 =$
     $\frac{e}{4} - \frac{1}{4} - \frac{1}{4} = \frac{e-2}{4}$

2. - $x + 2y = 2$ describe un plano
     $x = 0 \Rightarrow y = 1$
     $y = 0 \Rightarrow x = 2$
     Como se encuentra en el primer octante
     $D' =$
     - $0 \leq x \leq 2 - 2y$
     - $0 \leq y \leq 1$
   - $z = x^2 + y^2$ describe un paraboloide
     $0 \leq z \leq x^2 + y^2$

   $\int_0^1 (\int_0^{2-2y} (\int_0^{x^2+y^2} 1 dz) dx) dy$
   - $\int_0^{x^2+y^2} 1 dz = x^2 + y^2$
   - $\int_0^{2-2y} x^2 + y^2 dx \overset{Barrow}{=}$
     $\frac{x^3}{3} + xy^2\Big|_0^{2-2y} =$
     $y^2 (-2y + 2) + \frac{(-2y+2)^3}{3}$
   - $\int_0^1 y^2 (-2y + 2) + \frac{(-2y+2)^3}{3} dy =$
     - $\int_0^1 y^2(-2y + 2) dy =$
       $\int_0^1 -2y^3 + 2y^2 dy \overset{Barrow}{=}$
       $-\frac{y^4}{2} + \frac{2y^3}{3}\Big|_0^1 =$
       $-\frac{1}{2} + \frac{2}{3} = \frac{1}{6}$
     - $\int_0^1 \frac{(-2y+2)^3}{3} dy =$
       $\frac{1}{3} \int_0^1 -8y^3 + 24y^2 - 24y + 8 dy \overset{Barrow}{=}$
       $\frac{1}{3}(-2y^4 + 8y^3 - 12y^2 + 8y\big|_0^1) =$
       $\frac{1}{3}(-2 + 8 - 12 + 8) = \frac{2}{3}$

     $\int_0^1 y^2 (-2y + 2) + \frac{(-2y+2)^3}{3} dy = \frac{1}{6} + \frac{2}{3} = \frac{5}{6}$