PRINT Your Name:_____

<center>**Quiz 2 — August 26, 2015**</center>

Remove everything from your desk except this page and a pencil or pen.
The solution will be posted soon after the quiz is given.

 Circle your answer. **Show your work. Your work must be correct and coherent. Check your answer.**

Find $\int_0^1 \frac{y}{e^{2y}}dy$.

Answer: The problem is the same as $\int_0^1 ye^{-2y}dy$. We use integration by parts:

$$\int u\,dv = uv - \int v\,du.$$

Let $u = y$ and $dv = e^{-2y}dy$. Calculate $du = dy$ and $v = -\frac{1}{2}e^{-2y}$. The problem is equal to

$$\left(-\frac{y}{2}e^{-2y} + \frac{1}{2}\int e^{-2y}dy\right)\Big|_0^1 = \left(-\frac{y}{2}e^{-2y} - \frac{1}{4}e^{-2y}\right)\Big|_0^1 = -\frac{1}{2}e^{-2} - \frac{1}{4}e^{-2} + \frac{1}{4}$$

$$= \boxed{-\frac{3}{4}e^{-2} + \frac{1}{4}.}$$

By the way, the derivative of $-\frac{y}{2}e^{-2y} - \frac{1}{4}e^{-2y}$ is

$$ye^{-2y} - \frac{1}{2}e^{-2y} + \frac{1}{2}e^{-2y} = ye^{-2y},$$

as expected.