YT:

1) $g(x) = 2^{-x}$

$g'(x) = (\ln 2)2^{-x} \cdot -1 =$

$-\ln 2(2^{-x})$ or $-\frac{\ln 2}{2^x}$

2) $y = \log_{10}(2x)$

$y' = \frac{1}{\ln 10(2x)} \cdot 2 = \frac{2}{2x \ln 10} = \frac{1}{x \ln 10}$

3) $\int_1^e (6^x - 2^x)\,dx$

$\frac{1}{\ln 6} \cdot 6^x - \frac{1}{\ln 2} \cdot 2^x \Big|_1^e$

$\frac{6^x}{\ln 6} - \frac{2^x}{\ln 2} \Big|_1^e =$

$\left(\frac{6^e}{\ln 6} - \frac{2^e}{\ln 2}\right) - \left(\frac{6}{\ln 6} - \frac{2}{\ln 2}\right)$