Instructions: This assignment is open-book and open-note. You are welcome and encouraged to work with others, **but you must write up your answers individually and in your own words. Copying another person's work is strictly prohibited!** Answer each question. **Show all work to receive full credit.** Unless the question specifies, you may provide either an exact answer or round to two decimal places.

1) Differentiate (compute the derivative) each of the following functions. [**Note:** $\exp(x) = e^x$].

   (a) $te^{-3t}2^t$

   (b) $\dfrac{t}{e^{5t}}$

   (c) $5x^2\exp(\ln(5x^2))$

   (d)
$$\exp(2^{3^x})$$

   (e) $\dfrac{3y + y^2}{5 + y}$