1. [12 points] Indicate if each of the following is true or false by circling the correct answer (Justify your answer):

   a. [3 points] If $F(t)$ and $G(t)$ are antiderivatives of the function $f(t)$ with $F(0) = 1$ and $G(0) = 3$ then $F(2) - G(2) = 1$.

   <div align="right">True   False</div>

   b. [3 points] If $h(t) > 0$ for $0 \leq t \leq 1$, then the function $H(x) = \int_0^x h(t)dt$ is concave up for $0 \leq x \leq 1$.

   <div align="right">True   False</div>

   c. [3 points] If $\int_0^2 g(t)dt = 6$ then $\int_2^3 3g(2t - 4)dt = 9$.

   <div align="right">True   False</div>

   d. [3 points] $\frac{d}{dx}\left(\int_{-x^2}^{\sin x} e^{t^3} dt\right) = \cos x \; e^{x^3} + 2xe^{x^3}$.

   <div align="right">True   False</div>