1. (12 points) Let $f(x) = 2e^{x/2}$.

   (a) (4 pts.) Find $P_2(x)$, the Taylor polynomial for $f(x)$ of degree 2 centered at $x = 1$.

   (b) (3 pts.) Graph the functions $f(x)$ and $P_2(x)$ for $0 \leq x \leq 2$ on the same set of axes. Label each function clearly.

   (c) (2 pts.) Use the polynomial $P_2(x)$ that you wrote in part (a) to estimate $f(0.1)$ and $f(1.1)$.

   (d) (3 pts.) Briefly demonstrate which of the previous two approximations is more accurate.