1. (10 pts) Find the absolute maximum and minimum values of f on the given interval.

$$f(x) = x^4 - 2x^2 + 3, \quad [-2, 2]$$

2. (10 pts) The annual demand q for bottles of wine from a vineyard when the bottles are priced at p dollars each satisfies the equation $qe^{0.03p} = 5000$. The price is currently \$14 per bottle. Find the rate at which demand changes (with respect to time) if the price increases at a rate of \$1.20 per year.