1. Find all of the critical numbers of the function $f(t) = t\sqrt{t^2 - 1}$.

2. Give the x values, and the corresponding outputs, of the absolute maximum and minimum values of the function $f(x) = x^3 - 3x + 5$ on the interval $[-1, 3]$.

3. A factory produces widgets. It finds that its profit depends on the number of widgets it produces and can be estimated by $P(x) = \frac{-1}{10}(x^2 - 60x + 100)$ where x is the number of widgets produced per day, and $P(x)$ is the daily profit in hundreds of dollars given x widgets were produced. Their factory can produce between 0 and 100 widgets per day. How many widgets should the factory produce per day? What is their maximum daily profit?