1. If we have the demand function $p = -0.025x + 726$, find where the revenue is maximized.

**Solution:** The revenue function is

$$R(x) = px = (-0.025x + 726)x = -0.025x^2 + 726x$$

This function is maximized at $x = -\frac{b}{2a} = -\frac{726}{2(-0.025)} = \frac{726}{0.05} = 14520$

2. Your rich uncle has just given you a high school graduation present of $1,000,000. The present, however, is in the form of a 40 year bond with an annual interest rate of 9% compounded annually. The bond says that it will be worth $1,000,000 in 40 years. What is this million-dollar gift worth at the present time?

**Solution:** Using the present value equation

$$P = \frac{F}{(1 + \frac{r}{m})^{mt}} = \frac{1000000}{(1 + 0.09)^{40}} = \frac{1000000}{(1.09)^{40}} = 31,837.58$$