

**Ex 1** Suppose you have two investments: Plan 1 increases in value at a rate of  $500e^{0.01t}$  dollars per day. Plan 2 increases at a rate of  $100e^{0.03t}$  dollars per day. Find the net excess profit between the two plans from now until the plans are growing at the same instantaneous rate.

**Ex 2** Find the Gini Index for the United States, with  $L(x) = 1.4x^3 - 0.86x^2 + 0.41x$ . By this metric, does the US have more or less income inequality than Venezuela, which the CIA considers to have a Gini Index of 0.39? (Note: these numbers are not accurate; they are made up to suit the problem).

**Ex 3** The quarterly revenue for the Amazon Web Service over the past several years can be predicted roughly by

$$Q(t) = 32.4t^2 + 11.6t + 50$$

million dollars,  $t$  years after the beginning of 2009. What was the average quarterly revenue for AWS between the beginning of years 2012 and 2015 according to the model?