1. Consider the general equilibrium model of monopoly discussed in class. There are a continuum of goods indexed by \( t \in [0, 1] \). Let \( x(t) \) denote the consumption of good \( t \). The utility function is
\[
U = \int_0^1 x(t)^{\frac{1}{\mu}} dt
\]
for \( \mu > 1 \). Note the elasticity of substitution for the CES utility function is
\[
\sigma = \frac{\mu}{\mu - 1}.
\]
Suppose that the representative consumer has a unit endowment of time. There is a constant returns to scale production process for each good where one unit of time input results in one unit of output. Suppose that goods \( t \in [0, \lambda] \) are controlled by a monopolist and goods \( t \in (\lambda, 1] \) are perfectly competitive.

The representative consumer owns shares in all the firms. Assume monopoly firms that produce goods \( t \in [0, \lambda] \) maximize profit and turn this profit over to the representative consumer. Let \( \pi_M \) be the equilibrium monopoly profit in one such industry. Then income of the representative consumer is
\[
I = 1 + \lambda \pi_M.
\]

Suppose policy makers in this economy are considering opening an antitrust office that will make every industry competitive. Calculate the compensating variation for the representative consumer for this new allocation. Use the computer to make a table with the compensating variation for the following values of \( \lambda = \{0, .2, .4, .6, .8, 1\} \) and \( \sigma = \{1.01, 1.5, 2, 50, 1000\} \).

2. Varian 14.19