

Assignment 1

Due Friday, May 20, 2005 at the beginning of class.
Late assignments will be assessed a *minimum* 20% penalty.

In March 1989 the oil tanker *Exxon Valdez* crashed in Prince William Sound off the coast of Alaska. Damages to the environment due to the resulting oil spill were enormous. Exxon and several plaintiffs – including fishers associations and several levels of government – went to court.

According to some conservative estimates, Exxon had to pay:

- \$125 million in state and federal criminal sentences (paid in 1991)
- \$900 million in settlements for government claims for natural resource damages (10 equal-sized annual payments, starting in 1991)
- \$2.1 billion in cleanup expenditures, broken down as follows:
 - \$1.5 billion in 1989
 - \$400 million in 1990
 - \$100 million in 1991
 - \$100 million in 1992
- \$287 million in compensation to fishers (1991)
- \$304 million in private claim settlements (1991)
- \$46 million in casualty loss for the vessel and cargo

To make things simple, assume all payments for a given year are paid at once on January 1st.

For the discount rates of 4% and 7%,

1. Find the formula for and compute the present value (in 2004 dollars) of the cost of the *Exxon Valdez* spill.
2. Suppose that Exxon could have adopted stricter rules to ensure a rested crew and a sober master at the beginning of 1989. Enforcing these rules would have cost Exxon P dollars every subsequent year in the future, and the crash wouldn't have happened. If Exxon could have estimated the cost of the spill in 1989, how much would they have been willing to pay each year to avoid a crash?

Notes:

- Show all of your calculations and explain your steps. (You can use a spreadsheet to compute the results, but you still **must explain** your calculations)
- You can think about the assignment in a group, but you have to convince me that you wrote the answer alone; copied assignments will receive zero.