Ch 13 ex 2

10. Bond 1: $1000 in 1 year
    Bond 2: $1000 in 30 years

a) if \( r = 0.04 \)

\[
PDV_1 = \frac{1000}{1 + 0.04} = 961.54
\]

\[
PDV_2 = \frac{1000}{(1 + 0.04)^{30}} = 308.32
\]

b) The price of each bond will decrease

\[
PDV_1 = \frac{1000}{1 + 0.08} = 925.93
\]

\[
PDV_2 = \frac{1000}{(1 + 0.08)^{30}} = 99.38
\]

c) You lose much more value when interest rates rise in the 30 year bond, so it would have been better to invest in the Treasury bond.

d) What is the equilibrium price of the bonds?

\[\text{Equilibrium price} = PDV_2\]
15. a) Future Value of \( \$4 \): \( 4 \times (1 + 0.04)^{10} \approx \$5.49 \)
   So since \( 5.49 < 6 \) = future price, it's worth spending the money now to store gas.

b) Expected Price = 0.1(4)+ 0.4(5) + 0.5(6.80) = \$5.80 
   Now future value > expected price
   No longer worth it!

If we'd be risk averse it might change depending on how bad he considers the bad outcomes to be.