

HW 6

1. Do problems 1, 2 and 3 in the R Lab on pages 208, 209 and 210
2. Suppose that there two bonds A and B that may default and let T_A and T_B denote their respective default times. Suppose that $T_A \sim \text{Exponential}(\lambda_A = 0.10)$ and $T_B \sim \text{Exponential}(\lambda_B = 0.07)$. Assume that the risk free rate is 0 and that $(F_A(T_A), F_B(T_B))$ is distributed according to Joe's copula

$$C(u, v) = 1 - \left[(1-u)^2 + (1-v)^2 - (1-u)^2(1-v)^2 \right]^{1/2}$$

- (a) Consider an insurance with a payoff of \$2 million if both bonds default before the end of the first year and \$1 million if both survive the first year but they default before the end of the second year. Find the fair price of this insurance.
- (b) Consider an insurance with a payoff of \$2 million if both bonds default before the end of the first year and \$1 million if both survive the first year but A or B defaults before the end of the second year. Find the fair price of this insurance.