Tarea 6

1. $\psi(c_0)$ $\quad X \sim Exp(x \mid 1/\mu)$

$E[X] = \mu$

$$\psi = P\left(c_0 S - S E F_X(x)\right) \left(c_0 + \int P E F_X(x)\right)$$

$$\psi(c_0) = \frac{\exp\{-r c_0\}}{E F_{S+1}\left(\exp\{-r c_1\} \mid R_{c_0}\right)}$$

$$= \frac{e^{-r c_0}}{\int_0^\infty \frac{1}{\mu} e^{-1/\mu x} e^{-r c_T} \, dx}$$

$$= \frac{e^{-r c_0}}{\mu e^{-r c_0}}$$

$$2.\quad F_X(x) = P_a(x \mid a)$$

$$f_X(x) = (1+x)^{-a}\, \mathbb{1}_{(0,\infty)}(x)$$

$$\star \int_0^{\infty} \exp^{rx} \, F_X(dx)$$

$$F_X = \int_0^{x} (1+x)^{-a}\, dx$$

$$= \frac{(1+x)^{-a+1}}{(-a+1)}\Big|_0^{x}$$

$$= \frac{(x+1)^{1-a}}{(1-a)} - \frac{1}{(1-a)}$$

Calculo $\star$ $\int_0^{\infty} \exp^{rx} \left[\frac{1}{1-a}\left[(x+1)^{1-a} - 1\right.\right.$

$$= \frac{1}{1-a}\left[\underbrace{\int_0^{\infty} \exp^{rx}(x+1)^{1-a}\, dx}_{a} - \underbrace{\int_0^{\infty} \exp^{rx}}_{b}\right.$$

$a = \int u = (x+1)^{1-a} \quad du = (1-a)(x+1)^{-a}$

$dv = \int exp^{rx} \quad v = \frac{1}{r} exp^{rx}$

$$a = \frac{(x+1)^{1-a}}{r} exp^{rx} \Big|_0^\infty - \int_0^\infty \frac{1}{r} exp^{rx} (1-a)(x+1)^{-a}$$

desde este termino podemos ver que tiende a infinito y por lo tanto no esta definida