2.2 European Put

Consider a European put option maturing in 83 days with $S = 8$, $K = 6$, $r_c = 0.01$, $\sigma = 0.6$. Value the option using:

(a) A CRR model with three steps,
(b) An equal-probabilities model with three steps,
(c) A trinomial model with three steps,
(d) Black-Scholes.

SOLUTION

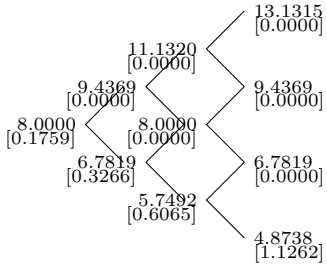
(a)

$$\Delta t = 0.0758$$

$$u = 1.1796$$

$$d = 0.8477$$

$$p_u = 0.4611$$



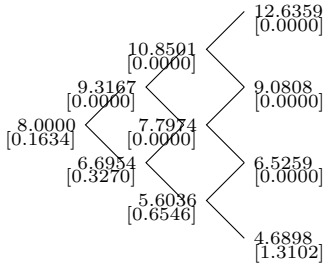
(b)

$$\Delta t = 0.0758$$

$$u = 1.1646$$

$$d = 0.8369$$

$$p_u = 0.5000$$



(c)

$$\Delta t = 0.0758$$

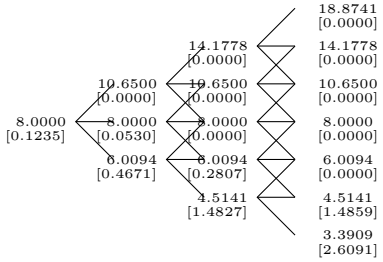
$$u = 1.3312$$

$$d = 0.7512$$

$$p_u = 0.1443$$

$$p_m = 0.6667$$

$$p_d = 0.1890$$



d)

$$d_1 = 1.1565.$$

$$d_2 = 0.8704.$$

$$P = 0.1597.$$