Quiz A: 08/08/14   Name __Key__

Your boss has asked you to determine how being able to <u>abandon</u> a proposed facility rather than continuing to operate it will affect the value of the facility. Set up the calculations needed to provide him with an answer.

Information on the facility:
Cost to build facility = $105 million
Present value today of the facility's cash flows: first three years = $30 million; first four years = $75
     million; all seven years = $135 million
Life of factory = seven years
Proceeds if sell factory at any time over the next four years = $45 million
Standard deviation of returns on factory: first year = 30%; first three years = 35%; first four years = 38%;
     all seven years = 40%

Information on possible expansion of the facility:
Cost to expand at any time over the next three years = $30 million
Present value of expansion's cash flows: PV at the time of expansion = $28.5 million; PV today = $24
     million
Life of expansion = seven years (once built)
Standard deviation of returns on expansion: over next three years = 45%; over next ten years = 50%

Returns on U.S. Treasuries: 1-year = 1.5%; 2-year = 2%; 3-year = 2.5%; 4-year = 3%; 5-year = 3.5%;
     7-year = 4%; 8-year = 5%; 10-year = 5.5%

$$+6\left(P = PV(K)(1-N(d_2)) - S^*(1-N(d_2))\right) \quad \textcircled{6}$$

$$+6\,(PV(K) = \frac{\overset{+10}{45}}{\underset{+10}{(1.03)^4}} {}^{+5} \quad \textcircled{31}$$

$$+6\left(d_2 = d_1 - .38\sqrt{4}\,\check{}\,\right.$$

$$+6\left(d_1 = \frac{\ln\left(\frac{S^*}{PV(K)}\right)}{.38\sqrt{4}} + \frac{\overset{+10}{.38}\sqrt{4}\,{}^{+5}}{2} \quad \textcircled{21}\right.$$

$$+10\ S^* = 135 - 75$$

$$+1 \Rightarrow \text{look up } N(\ ) \text{ using Excel or on tables}$$