

TI-84+ Lab 5 For Mathematics 224

Topics: present value of continuous money flow with continuous compounding, accumulated (future) value of continuous money flow with continuous compounding

Present Value of Continuous Money Flow with Continuous Compounding.

Find P if $f(t) = 3t + 5$, $r = 0.07$, $[0, 3]$.

$$\begin{aligned}
 P &= \int_0^3 (3t + 5)e^{-0.07t} dt \\
 &= \left[\left(-\frac{3t + 5}{0.07} - \frac{3}{0.0049} \right) e^{-0.07t} \right]_{t=0}^{t=3} \\
 &= \left[\left(-\frac{3(3) + 5}{0.07} - \frac{3}{0.0049} \right) e^{-0.07(3)} \right] - \left[\left(-\frac{3(0) + 5}{0.07} - \frac{3}{0.0049} \right) e^{-0.07(0)} \right] \approx 25.28
 \end{aligned}$$

$$Y_1 = (3x + 5)e^{-0.07x}, \text{ MATH fnInt}(Y_1, X, 0, 3)$$

Accumulated (Future) Value of Continuous Money Flow with Continuous Compounding. Find A if $f(t) = 3t + 5$, $r = 0.07$, $[0, 3]$.

$$\begin{aligned}
 A &= e^{rT} \int_0^T f(t)e^{-rt} dt \\
 &= e^{0.07(3)} \int_0^3 (3t + 5)e^{-0.07t} dt \\
 &= e^{0.07(3)} \left[\left(-\frac{3t + 5}{0.07} - \frac{3}{0.0049} \right) e^{-0.07t} \right]_{t=0}^{t=3} \\
 &= e^{0.07(3)} \left\{ \left[\left(-\frac{3(3) + 5}{0.07} - \frac{3}{0.0049} \right) e^{-0.07(3)} \right] - \left[\left(-\frac{3(0) + 5}{0.07} - \frac{3}{0.0049} \right) e^{-0.07(0)} \right] \right\} \\
 &\approx 31.19
 \end{aligned}$$

Multiply $e^{0.07(3)}$ times MATH fnInt($Y_1, X, 0, 3$)