12. $c(t) = 900 \quad r = 4\% = .04 \quad T = 3$

$$Amt = e^{rT} \int_0^T c(t)\, e^{-rt}\, dt$$

$$= e^{.04(3)} \int_0^3 900\, e^{-.04t}\, dt \qquad \int_0^3 e^{.04(3)}\, 900\, e^{-.04t}\, dt$$

$$= e^{.12}(900) \int_0^3 e^{-.04t}\, dt$$

$u = -.04t \quad du = -.04\, dt$

$$= 900 e^{.12} \left(\frac{1}{-.04}\right) \int_0^3 (-.04)\, e^{-.04t}\, dt$$

$$= \frac{-900 e^{.12}}{.04} \int_{t=0}^{t=3} e^u\, du$$

$$= \frac{-900 e^{.12}}{.04} \left[e^u \right]_{t=0}^{t=3}$$

$$= \frac{-900 e^{.12}}{.04} \left[e^{-.04t} \right]_0^3$$

$$= \frac{-900 e^{.12}}{.04} \left[e^{-.04(3)} - e^{-.04(0)} \right]$$

$$= \frac{-900 e^{.12}}{.04} \left[e^{-.12} - 1 \right]$$

$$= 2868.68$$