KNEWTON | alta

# Income Streams

**Learning Objectives**

- Find the total income for a continuous stream
- Find the present value of a continuous stream
- Find the future value of a continuous stream

*Find the total income for a continuous stream*

1. Suppose you have a continuous income stream given by $f(t) = 2500 + 600e^{0.15t}$. Determine the amount of income from this stream in the second year. Round your answer to the nearest penny.

*Find the present value for a continuous stream*

2. Find the accumulated present value of an investment over a 5-year period if there is a continuous money flow of $9,000 per year and the interest rate is 2.5% compounded continuously. Round your answer to the nearest cent.

*Find the future value for a continuous stream*

3. A 30-year-old places a continuous stream of $5,000 per year into a retirement account which has a continuously-compounding interest rate of 1.6%. What will be the value of this continuous stream when this person retires at age 65? Round your answer to the nearest penny.

- Total income: $\int_{t_0}^{t_f} f(t)dt$
- Present Value: $\int_0^T f(t)e^{-rt}dt$
- Future Value: $\int_0^T f(t)e^{r(T-t)}dt$

# ANSWER KEY

1. $3252.10
2. $42,301.12
3. $234,585.16