Name
Student ID #:
Section #:

Question 1. David can receive one of the following two payment streams:
• 200 at time 0, 200 at time 1, and 300 at time 2
• 600 at time 1

At an annual effective interest rate of \( i \), the present values of the two streams are equal.

Given \( i^2 = 0.03 \), determine \( i \).

\[
\text{Present value of 1st stream} = \frac{100 + 200r^n + 300r^{2n}}{0.76} = 600(1+i)^{-10}
\]

\( i = 3.5\% \)

Question 2. John invests $1000 in a bond which earns interest during the first year at a semi-
annual rate of 4% convertible quarterly. During the second year the bond earns interest at a nominal
discount rate of 3% convertible quarterly. At the end of the second year, the bond has accumulated
to $1173.54. Calculate \( \kappa \).

\[
1000 \left(1 + \frac{4}{4} \right) \left(1 - \frac{4}{4} \right)^{-4} = 1173.54
\]

\[
\left(\frac{4 + \kappa}{4 - \kappa}\right)^4 = 1.17354
\]

\[
4 + \kappa = (1.17354)^{1/4}(4 - \kappa)
\]

\[
k \left(1 + (1.17354)^{1/4}\right) = 4 \left(1 + 1.17354^{1/4}\right) - 4
\]

\( \kappa = 8\% \)