

(ii) When the iteration approach is used, it is expected that calculators or computers will be programmed to carry all available decimals throughout the calculation and that enough iterations will be performed to make virtually certain that the annual percentage rate obtained, when rounded to 2 decimals, is correct. Annual percentage rates in the examples below were obtained by using a 10 digit programmable calculator and the iteration procedure described above.

(c) Examples for the actuarial method. (1) Single advance transaction, with or without an odd first period, and otherwise regular. The general equation in paragraph (b)(8) of this section can be put in the following special form for this type of transaction:

$$A = \frac{1}{(1+fi)(1+i)^t} \left(P \overset{**}{\underset{\sqrt[n]{}}{a}} \right)$$

Example (i): Monthly payments (regular first period)

Amount advanced (A) = \$5000. Payment (P) = \$230.
 Number of payments (n) = 24.
 Unit-period = 1 month. Unit-periods per year (w) = 12.
 Advance, 1-10-78. First payment, 2-10-78.
 From 1-10-78 through 2-10-78 = 1 unit-period. (t = 1; f = 0)
 Annual percentage rate (I) = wi = .0969 = 9.69 %

Example (ii): Monthly payments (long first period)

Amount advanced (A) = \$6000. Payment (P) = \$200.
 Number of payments (n) = 36.
 Unit-period = 1 month. Unit-periods per year (w) = 12.
 Advance, 2-10-78. First payment, 4-1-78.
 From 3-1-78 through 4-1-78 = 1 unit-period. (t = 1)
 From 2-10-78 through 3-1-78 = 19 days. (f = 19/30)
 Annual percentage rate (I) = wi = .1182 = 11.82%

Example (iii): Semimonthly payments (short first period)

Amount advanced (A) = \$5000. Payment (P) = \$219.17.
 Number of payments (n) = 24.
 Unit-period = 1/2 month. Unit-periods per year (w) = 24.
 Advance, 2-23-78. First payment, 3-1-78. Payments made on 1st and 16th of each month.
 From 2-23-78 through 3-1-78 = 6 days. (t = 0; f = 6/15)
 Annual percentage rate (I) = wi = .1034 = 10.34 %

Example (iv): Quarterly payments (long first period)

Amount advanced (A) = \$10,000. Payment (P) = \$385.
 Number of payments (n) = 40.
 Unit-period = 3 months. Unit-periods per year (w) = 4.
 Advance, 5-23-78. First payment, 10-1-78.
 From 7-1-78 through 10-1-78 = 1 unit-period. (t = 1)
 From 6-1-78 through 7-1-78 = 1 month = 30 days. From 5-23-78 through 6-1-78 = 9 days. (f = 39/90)
 Annual percentage rate (I) = wi = .0897 = 8.97 %