1. (10%) To save for a car, Hannah opens a bank account into which she deposits $3,200 at t=0, her family deposits $3,500 six months later, and Hannah deposits another $800 three months after that. If i(2)=8%, which of the following is the closest to the most expensive car Hannah can purchase, using just this account at t=1 year?

(A) $7,509  (B) $7,798  (C) $7,851  (D) $7,917  (E) $8,012

2. (10%) Bill opens up a saving account today that earns interest at nominal rate of i(4) and deposits $1,750 into it. At the end of three years, the account has accumulated to $2,104.73. Calculate i(4)

(A) 6.20%  (B) 6.25%  (C) 6.30%  (D) 6.35%  (E) 6.40%

3. (10%) Jack and Jane both deposit $200 into separate bank accounts on January 1, 2007. Jack earns interest at a simple annual interest rate of j, while Jane earns interest at a nominal rate of 3% convertible semi-annually. On January 1, 2012, their accounts have the same value. Calculate j.

(A) 3.02%  (B) 3.21%  (C) 3.30%  (D) 3.43%  (E) 3.54%

4. (20%) Bruce and Robbie each open up new bank accounts at time 0. Bruce deposits 100 into his bank account, and Robbie deposits 50 into his. Each account earns an annual effective discount rate of d.

The amount of interest earned in Bruce's account during the 11th year is equal to X. The amount of interest earned in Robbie's account during the 17th year is also equal to X.

Calculate X

(A) 28.0  (B) 31.3  (C) 34.6  (D) 36.7  (E) 38.9

| Your answers: (Leave blank if you need no grading) |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 1               | 2               | 3               | 4               | 5               | 6               |
|                 |                 |                 |                 |                 |                 |
5. (20%) At a nominal interest rate of $i$ convertible semi-annually, an investment of 1000 immediately and 1500 at the end of the first year will accumulate to 2600 at the end of the second year.

Calculate $i$.

(A) 2.75%  (B) 2.77%  (C) 2.79%  (D) 2.81%  (E) 2.83

6. (30%) Joe deposits 10 today and another 30 in five years into a fund paying simple interest of 11% per year.

Tina will make the same two deposits, but the 10 will be deposited $n$ years from today and the 30 will be deposited $2n$ years from today. Tina’s deposits earn an annual effective rate of 9.15%.

At the end of 10 years, the accumulated amount of Tina’s deposits equals the accumulated amount of Joe’s deposits.

Calculate $n$

(A) 2.0  (B) 2.3  (C) 2.6  (D) 2.9  (E) 3