Directions: Please answer the following questions and make sure your answer are legible. If you don’t show work and/or I can’t follow it, I won’t give partial credit. You may use a calculator (not the calculator function on other technology) and the Formula Sheet that I provide you, nothing else. Good Luck.

1. (8 points)
   (a) Willy has 20 car payments of $330 a month left. If his auto loan has a 4.2% interest rate, what is the remaining balance on Willy’s auto loan?
   
   (b) Now assume Willy also has 3 years of $225 monthly payments left on a personal loan where his interest rate is 5% and his remaining balance is $7507.28. Willy would like to consolidate these two loans into a new 3 year loan at 4.5% interest.
      i. How much does he need to borrow for the new loan?
      ii. Use the fact that $a_{55,045/12} = 33.61692066$ to determine the monthly payments on his new loan.

   a) Remaining Balance = PV of all 20 remaining PMTs of $330 each
   
   $PV = PMT \cdot a_{\overline{20}|i}$
   
   $PV = ?$
   
   $PMT = 330$
   
   $n = 20$
   
   $i = 0.042/12$
   
   $a_{\overline{20}|i} = \frac{(1 + \frac{0.042}{12})^{20} - 1}{\frac{0.042}{12}}$
   
   $a_{\overline{20}|i} = 19.28349163$
   
   $PV = 330 \cdot 19.28349163 = 6363.55$ Remaining balance

   b) remaining bal car loan + rem. bal of per. loan

   $6363.55 + 7507.28 = 13870.83$

   $PV = PMT \cdot a_{\overline{36}^2}$

   Given: $13870.83$

   $33.61692066 = PMT$

   $412.61 = PMT$

   There are questions on the back.
2. (3 points) Tootsie Roll Industries, Inc's stock paid out a dividend of $0.08 per share in March of 2015. If today (March 30, 2015) the stock is selling for $34.16, find the current dividend yield for this stock.

\[
\text{Current div. yield} = \frac{0.08 \times 4}{34.16}
\]

\[= 0.09367...\]

\[= 9.4\%\]

3. (4 points) Nestle Stock is selling for $76.87 a share today (March 30, 2015). Three Years ago (March 30, 2012) you bought 4 shares at $63.00 each. The stock has not undergone any splits in the past 3 years.

(a) How much is your investment worth today?

(b) What Compound Annual Growth Rate (rate of return) did your investment earn?

\[\text{a) 4 shares at } \$76.87 \text{ each } = \$307.48\]

\[\text{b) } i = \left( \frac{FV}{PV} \right)^{\frac{1}{n}} - 1\]

\[FV = 307.48\]

\[PV = 4 \times 63.00 = 252.00\]

\[n = 3\]

\[i = \left( \frac{307.48}{252.00} \right)^{\frac{1}{3}} - 1\]

\[i = 0.068483...\]

\[\text{CAGR} = 6.85\%\]

Bonus: (1pt) Refer to Question 1.

a) How much would Willy have spent repaying his 2 loans (before consolidation and refinancing)?

b) How much will Willy spend repaying his loan (after consolidation and refinancing)?

\[a) (20 \times 330) + (26 \times 225) = 514700\]

\[= 14700 + 8100\]

\[= 6600 + 8100\]

\[b) 3.5 \times 416.61 = 1499.796\]