

Math 099 - Assignment 9

April 9, 2019

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary. This assignment is worth 5 points.

1. Dre bought a new TV for \$899.99. He took a loan for the money at 9.99% simple interest for two years.

(a) How much interest will he pay?

$$I = (899.99)(0.0999)(2)$$
$$= \$179.82$$

(b) Dre decides to pay the total amount (principal + interest) in 24 equal monthly payments. How much is each payment?

$$\frac{899.99 + 179.82}{24} = \$44.99$$

2. Heather invests \$25,000 into an account earning 4.75% compounded quarterly.

(a) How much is in the account after 12 years?

$$A = 25000 * \left(1 + \frac{0.0475}{4}\right)^{(4 * 12)}$$
$$= \$44,058.49$$

(b) How much of the account value is from interest?

$$44058.49 - 25000 = \$19,058.49$$

Turn Over.

3. Determine the better investment: 3% compounded daily or 3.1% compounded semi-annually. (Compute and compare the effective interest rates.)

* BETTER INVESTMENT

DAILY:

$$E = \left(1 + \frac{0.03}{365}\right)^{365} - 1$$

$$\approx 0.03045$$

$$\boxed{3.045\%}$$

SEMI-ANNUALLY:

$$E = \left(1 + \frac{0.031}{2}\right)^2 - 1$$

$$\approx 0.03124$$

$$\boxed{3.124\%}$$

4. For 38 years, Oscar will deposit \$4000 each year into an account earning 8.25% compounded annually.

- (a) What is the future value of the account?

$$A = \frac{4000 * \left(\left(1 + \frac{0.0825}{1}\right)^{1*38} - 1 \right)}{\left(\frac{0.0825}{1} \right)} = \boxed{\$937,491.36}$$

- (b) After 38 years, how much will Oscar have deposited into the account?

$$4000 * 38 = \boxed{\$152,000}$$

- (c) How much of the future account value will be from interest?

$$937491.36 - 152000$$

$$= \boxed{\$785,491.36}$$