

Math 112 - Quiz 9

April 11, 2018

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (4 points) Jon needs \$1400 to buy a new MacBook Pro laptop computer. The computer store lends Jon the money at 9.99% simple interest for 24 months (2 years).

(a) How much interest will Jon pay?

$$I = (1400)(0.0999)(2) = \$279.72$$

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

$$\frac{1400 + 279.72}{24} = \$69.99$$

2. (3 points) You find an annuity that is pays an interest rate of 6.75% compounded quarterly. How much money must you deposit each quarter in order to have \$400,000 in 35 years?

$$R = \frac{400000 * (0.0675/4)}{\left(\left(1 + 0.0675/4\right)^{(4*35)} - 1\right)} = \$717.31$$

3. (3 points) After winning \$50,000 on a game show, Ashley invests the money in an account earning 5.65% compounded monthly. Use guess and check to determine about how long it will take for the account value to grow to \$150,000.

$$150000 = 50000 \left(1 + \frac{0.0565}{12}\right)^{(12*t)}$$

$$t = 15 \text{ gives } \$116,458.40$$

$$t = 19 \text{ gives } \$145,912.00$$

⋮

$$t = 19.49 \text{ gives } \$149,998.27$$

Close enough!

$$t \approx 19.49 \text{ years}$$