

## Lesson 2.2 Answers

Page 1 "Your Turn" :

$$\begin{aligned}FV &= 6500 \left(1 + \frac{.08}{12}\right)^{12(1)} \\&= 6500 (1.0066\overline{6})^{12} \\&= 6500 (1.747422051) \\&= \boxed{\$11,358.24}\end{aligned}$$

## Page 2 Activity

1.

compounding schedule	n	<del>1</del> $\left(1 + \frac{1}{n}\right)^n$	Value
Annually	1	$1\left(1 + \frac{1}{1}\right)^1$	2.00000
semiannually	2	$1\left(1 + \frac{1}{2}\right)^2$	2.25000
quarterly	4	$1\left(1 + \frac{1}{4}\right)^4$	2.44140
monthly	12	$1\left(1 + \frac{1}{12}\right)^{12}$	2.61303
daily	365	$1\left(1 + \frac{1}{365}\right)^{365}$	2.71457
hourly <del>hourly compounding</del>	8670	$1\left(1 + \frac{1}{8670}\right)^{8670}$	2.71813
Every minute	525,600	$1\left(1 + \frac{1}{525,600}\right)^{525,600}$	2.71828
Every second	31,536,000		2.71828

As  $n$  grows, the value of  $1\left(1 + \frac{1}{n}\right)^n$  approaches the number 2.71828, this is the # "e". "e" is an irrational # similar to  $\pi$

# Lesson 2.2 Answers

Page 3 "Your Turn"

$$A = Pe^{rt} \rightarrow A = 500e^{(.09)(4)} = \boxed{\$716.66}$$

## Page 3 Practice

53)

n	1	2	4	12	365	continuous
A	3200.21	3205.04	3207.57	3209.28	3210.04	3210.06

54)

n	1	2	4	12	365	continuous
A	1790.85	1806.11	1814.02	1819.40	1822.03	1822.12

55)

n	1	2	4	12	365	continuous
A	5477.81	5520.10	5541.79	5556.46	5563.61	5563.85

## Page 4 Practice

57)

t	1	10	20	30	40	50
A	12,484.73	17,401.40	26,706.49	39,841.40	59,426.34	88,668.67

58)

t	1	10	20	30	40	50
A	12,742.04	21,865.43	39,841.40	75,545.77	132,278.12	241,026.44

59)

t	1	10	20	30	40	50
A	12,427.44	17,028.81	24,165.03	34,291.81	48,662.46	69,055.23

## Lesson 2.2 Answers

### Page 4 practice cont

$$61) A = 25 \left[ \frac{\left(1 + \frac{.12}{12}\right)^{48} - 1}{\frac{.12}{12}} \right]$$
$$= 25 \left[ \frac{1.01^{48} - 1}{.01} \right] = \boxed{\$1,530.57}$$

$$62) \$7,542.41$$

$$63) \$17,281.77$$

$$64) \$1,852.71$$

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$$66) a: \text{equation 1 (annual): } 500 (1 + .07)^x$$
$$\text{equation 2 (quarterly): } 500 \left(1 + \frac{.07}{4}\right)^{4x}$$
$$\text{equation 3 (continuous): } ~~500~~ (1 + 500 e^{.07x})$$

$$b: \text{equation 1 - 20 yrs} = \$1,934.84$$

$$\text{equation 2 - 20 yrs} = \$2,003.20$$

$$\text{equation 3 - 20 yrs} = \boxed{\$2,027.60} - \text{highest return}$$