

Homework #21
math 211

Problems for Section 6.3

1. Find the present and future values of an income stream of \$3000 per year over a 15-year period, assuming a 6% annual interest rate compounded continuously.

3. (a) Find the present and future value of an income stream of \$6000 per year for a period of 10 years if the interest rate, compounded continuously, is 5%.
(b) How much of the future value is from the income stream? How much is from interest?

5. A small business expects an income stream of \$5000 per year for a four-year period.
 - (a) Find the present value of the business if the annual interest rate, compounded continuously, is
 - (i) 3%
 - (ii) 10%
 - (b) In each case, find the value of the business at the end of the four-year period.

Solutions

Section 6.3

- 1 Future value = \$72,980.16
Present value = \$29,671.52
- 3 (a) $P = \$47,216.32$
 $F = \$77,846.55$
(b) \$60,000; \$17,846.55
- 5 (a) (i) \$18,846.59
(ii) \$16,484.00
(b) (i) \$21,249.47
(ii) \$24,591.24
- 7 (a) \$65,022
(b) ≈ 2.27 years
- 9 (a) \$417,635.11
(b) \$228,174.64
- 11 \$41,508
- 13 (a) \$4.6 billion; \$8.6 billion
(b) \$54.7 billion
(c) \$77.6 billion
- 15 About 1.75 years
- 17 In 10 years

Section 6.4

- 3 11%
- 5 Absolute:
2003-2004: 3.1 m
2006-2007: 2.0 m
Relative:
2003-2004: 10.3%
2006-2007: 5.3%
- 7 (a) $P = 4000 - 100t$
- (b) $P = 4000(0.95)^t$
Case (a)
- 9 22% increase
- 11 No change
- 13 Increasing $0 \leq t \leq 10$
- 15 Decreasing: $0 < t < 5$
Increasing: $5 < t < 10$
- 17 (a) $P = 5.78(1.018)^t$
(b) 0.10404 mil/yr
0.10591 mil/yr
(c) 1.8%, 1.8%
- 19 Decreases by about 9.52%