Homework #22

Problems for Section 6.4

3. The relative growth rate of a population is given in Figure 6.32. By what percentage does the population change over the 10-year period?

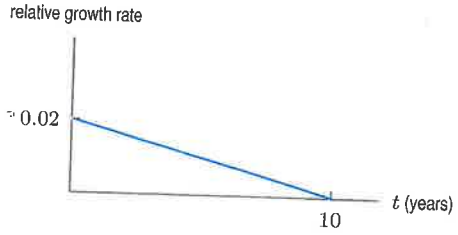


Figure 6.32

5. Table 6.3 shows the cumulative number of AIDS deaths worldwide.[6] Find the absolute increase in AIDS deaths between 2003 and 2004 and between 2006 and 2007. Find the relative increase between 2003 and 2004 and between 2006 and 2007.

Table 6.3 *Cumulative AIDS deaths worldwide, in millions*

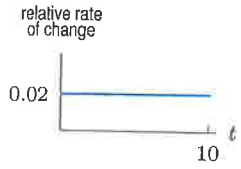
Year	2003	2004	2005	2006	2007
Cases	30.2	33.3	35.5	37.6	39.6

7. The size of a bacteria population is 4000. Find a formula for the size, P, of the population t hours later if the population is decreasing by

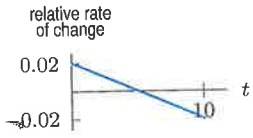
(a) 100 bacteria per hour **(b)** 5% per hour

In Problems 9–12, a graph of the relative rate of change of a population is given with t in years. By approximately what percentage does the population change over the 10-year period?

9.

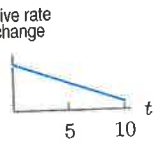


11.

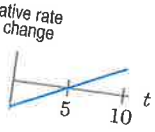


Problems 13–16 show the relative rate of change of f for $0 \le t \le 10$. Give the intervals on which f is increasing and on which f is decreasing.

13.



15.



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%