

5.2-5.3 Quiz

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Precalculus BC Quiz #2-2 Hungerford 5.2-5.2A

Name: Key November 12, 2008

In 1 and 2, \$5000 is invested at 8% annual interest.

1. If interest is compounded weekly, how much will you have after 6 years?

$$\$5000 \left(1 + \frac{.08}{52}\right)^{52 \cdot 6} = \$8077.39$$

2. How long would it take to have the same amount of money if interest is compounded continuously?

$$\text{Solve } 5000 e^{.08t} = \$8077.39$$
$$t \approx 5.995$$

3. In 1988, 65.6 million vinyl singles were sold; in 1996, 10.1 million vinyl singles were sold. Write the number of singles sold as a function of time, with $t = 0$ in 1980.

$$\begin{aligned} f(8) &= 65.6 \\ f(16) &= 10.1 \end{aligned} \Rightarrow \begin{cases} a \cdot b^8 = 65.6 \\ a \cdot b^{16} = 10.1 \end{cases} \Rightarrow a=426.075 \text{ and } b=0.791457$$
$$\therefore f(t) = 426.075 (0.791457)^t$$

4. How long does it take for the number of singles to reduce by a factor of 50%?

$$\frac{1}{2} = (0.791457)^t \Rightarrow t \approx 2.16 \text{ yrs}$$

5. If f is given by the graph at right, find

a. $\lim_{x \rightarrow +\infty} f(x) \rightarrow f(x) \rightarrow -5$

b. $\lim_{x \rightarrow -\infty} f(x) \rightarrow f(x) \rightarrow 3$

