Problem 1: State the four important elements of every model:

1. 

2. 

3. 

4. 

Problem 2: \( E(t) \) is the value of cotton exports (in millions of dollars) in year \( t \). Write sentences interpreting the following mathematical statements:

a. \( E(1988) = 1975 \)

b. \( E = 1999 \) when \( t = 1992 \)

Problem 3: Find the output of the function corresponding to each input value given:

\[
S(t) = \frac{120}{1 + 3e^{-2t}} \text{ for } t = 3, t = 0
\]
Problem 4: The salary of one of Compaq Computer Corporation’s senior vice presidents from 1996 to 1998 can be modeled by

\[ S(t) = 69,375t + 380,208 \text{ dollars} \]

t years after 1996. His other, nonsalary compensation during the same period can be modeled by

\[ C(t) = -31.67t^2 + 137.15t + 233.5 \text{ thousand dollars} \]

t years after 1996. In addition, each year he received an average bonus of 650,000.

a. Construct a model for this VP’s total yearly salary package, including nonsalary compensation and bonuses.

b. Estimate the VP’s 1997 total salary package.

Problem 5: Suppose you bought a Honda Civic Hybrid in 2005 for $24,000. In 2007 it was worth $18,200. Assume that the rate at which the car depreciates is constant.

a. Find the rate of change of the value of the car.

b. Complete the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td></td>
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<tr>
<td>2007</td>
<td></td>
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<td>2008</td>
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<tr>
<td>2009</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
</tr>
</tbody>
</table>