Homework 1.3 – Derivatives of Linear Functions

1. **(1 pt) alfredLibrary/AUCI/chapter1/lesson3/derivativeoflinear1.pg**
Suppose b is a real constant.

If $f(x) = b$, then $f'(x) =$ _____.

If $g(x) = 17$, then $g'(x) =$ _____.

If $h(x) = -5$, then $h'(x) =$ _____.

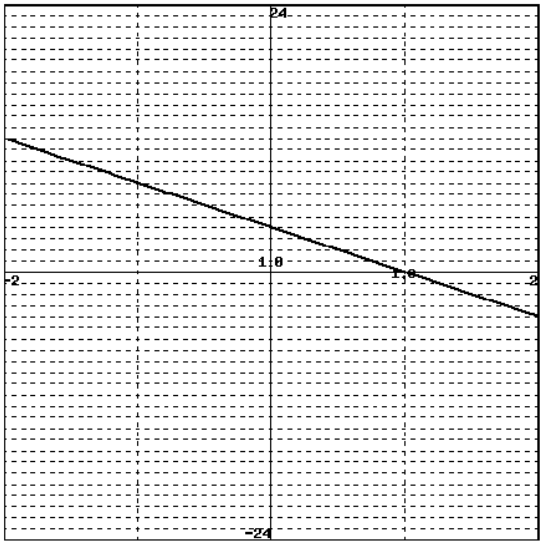
2. **(1 pt) alfredLibrary/AUCI/chapter1/lesson3/derivativeoflinear2.pg**
Suppose m and b are real constants.

If $f(x) = mx + b$, then $f'(x) =$ _____.

If $g(x) = 5x - 8$, then $g'(x) =$ _____.

If $h(x) = -15x + 26$, then $h'(x) =$ _____.

3. **(1 pt) alfredLibrary/AUCI/chapter1/lesson3/derivativefromgraph2pet.pg**
Suppose the position s of a car at time t is linear as shown in the graph below. Your answers must include **units**.



If the position is given in feet and time is measured in minutes, then $s'(t) =$ _____.

This means that the velocity (rate of change of position) of the car is _____.

4. **(1 pt) alfredLibrary/AUCI/chapter1/lesson3/derivativeasslope1pet.pg**
The function $H(t)$ measures the amount of hydrogen in a tank, in cubic feet, at time t hours. Suppose $H(t)$ is a linear function such that $H(3) = 114ft^3$, and $H'(3) = 3\frac{ft^3}{hr}$. Then

$H(11) =$ _____ (Include **units**.)

Hint: First find the point-slope form for H.

5. **(1 pt) alfredLibrary/AUCI/chapter1/lesson3/quiz/question3p.pg**
Suppose $b(t)$ is the length of a bamboo shoot, measured in kilometers, at time t, measured in days. Then $b'(t)$ represents the rate at which the length is changing at time t, and $b''(t)$ is the rate at which the rate of change is changing at time t.

The units for $b'(t)$ are _____.

The units for $b''(t)$ are _____.

Abbreviations for **units**.