7. [10 points] For each blank below, choose the correct answer from the options at the bottom of the page. It may be possible to use an answer more than once. Write the complete answer carefully in the blank. Assume throughout the problem that a, b, c, h, k are each **positive** constants.

a. [4 points] Suppose you have a total of c dollars to spend, and apples cost a dollars per pound, and bananas cost b dollars per pound. If you spend all your money on apples and bananas, and you buy x pounds of apples and y pounds of bananas, the relationship is linear, i.e. $y = mx + r$. Find the slope m and the $y-$intercept r in terms of a, b, and c.

$m =$ -a/b

$r =$ c/b

Solution: The total cost amount you have to spend is $c = ax + by$. We use this to solve for y:

$$y = -\frac{a}{b}x + \frac{c}{b}.$$

b. [4 points] If a function $f(t)$ has domain $[-1, a]$ and range $[b, c]$, what are the domain and range of the function $f(t + h) - k$?

The domain of $f(t + h) - k$ is $[-1 - h, a - h]$

The range of $f(t + h) - k$ is $[b - k, c - k]$

c. [2 points] Suppose a function $g(x)$ has a horizontal asymptote $y = -k$. What is the horizontal asymptote of $g(x - a) + b$?

The horizontal asymptote of $g(x - a) + b$ is $y =$ 0

Options:

$a - h$	$a + h$	$b - h$	$b + h$	$c + h$	$c - h$	$a - k$	$a + k$
$1 - h$	$1 + h$	$h - 1$	$b + k$	$c + k$	$c - k$	$b - k$	$-1 - h$
$\frac{a}{b}$	$-\frac{a}{b}$	$\frac{b}{a}$	$-\frac{b}{a}$	$\frac{c}{a}$	$-\frac{c}{a}$	$\frac{c}{b}$	$-\frac{c}{b}$