Recitation Exam 2

Problem 1: (10 points)
A missile is launched from rest exactly horizontally from the top of a cliff of height $H$. The missile remains horizontal throughout its trajectory, with its thrust providing a horizontal acceleration. The horizontal acceleration increases with time according to

$$a(t) = \left(3A \frac{g}{H} t^2 + B \right) g$$

where $A$ and $B$ are a given positive constants and $g$ is the acceleration due to gravity.

(a) (2 point) What are the units of $A$ and the units of $B$?
(b) (4 points) How far from the edge of the cliff does the missile hit?
(b) (4 points) What is the missile’s acceleration vector at the moment the missile hits the ground?