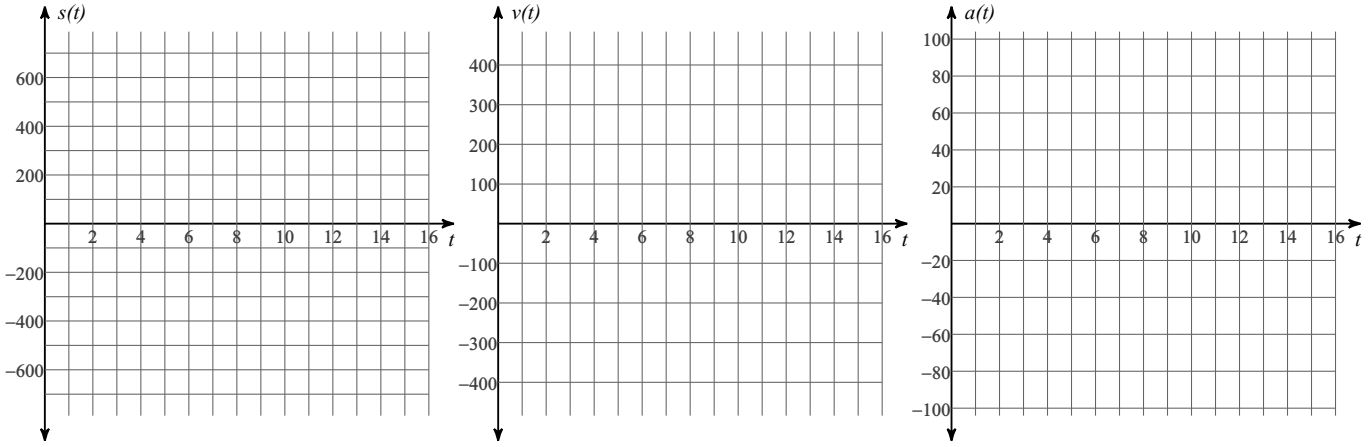
AP Calculus AB Name_____ ID: 1

Hwk: Horizontal Motion

Date_____ Period____

A particle moves along a horizontal line. Its position function is $s(t)$ for $t \geq 0$. For each problem, find the velocity function $v(t)$ and the acceleration function $a(t)$. You may use the blank graphs to sketch $s(t)$, $v(t)$, and $a(t)$.

1) $s(t) = -t^3 + 22t^2 - 121t$



A particle moves along a horizontal line. Its position function is $s(t)$ for $t \geq 0$. For each problem, find the maximum speed and times t when this speed occurs, the displacement of the particle, and the distance traveled by the particle over the given interval.

2) $s(t) = -t^2 + 7t + 120;\ 0 \leq t \leq 6$

A particle moves along a horizontal line. Its position function is $s(t)$ for $t \geq 0$. For each problem, find the times t when the particle changes directions, the intervals of time when the particle is moving left and moving right, the times t when the acceleration is 0, and the intervals of time when the particle is slowing down and speeding up.

3) $s(t) = t^3 - 12t^2$