20-P-KM-AF-006

Rectilinear Erratic Motion: Intermediate

Q:

The plane travels in a straight line, the graph below describes it's motion The plane starts at rest. Create a a-s graph and find the value of acceleration s = A, B, C [ask for v of t eqn if poosible]

↳ will update when can have eqns be answers

A: the two eqns

$0 < s < 8$

$y = -1/8\, s + 14$

use $a\,ds = v\,dv$

$\Rightarrow a = v\, dv/ds = \left[-1/8\, s + 14\right] \dfrac{d\left[-1/8\, s + 14\right]}{ds}$

$= \left[-1/8\, s + 14\right]\left[-1/8\right]$

$a = 1/64\, s - 7/4$

$8 < s < 10$

$y = -3.25\,(s-8)^2 + 13$

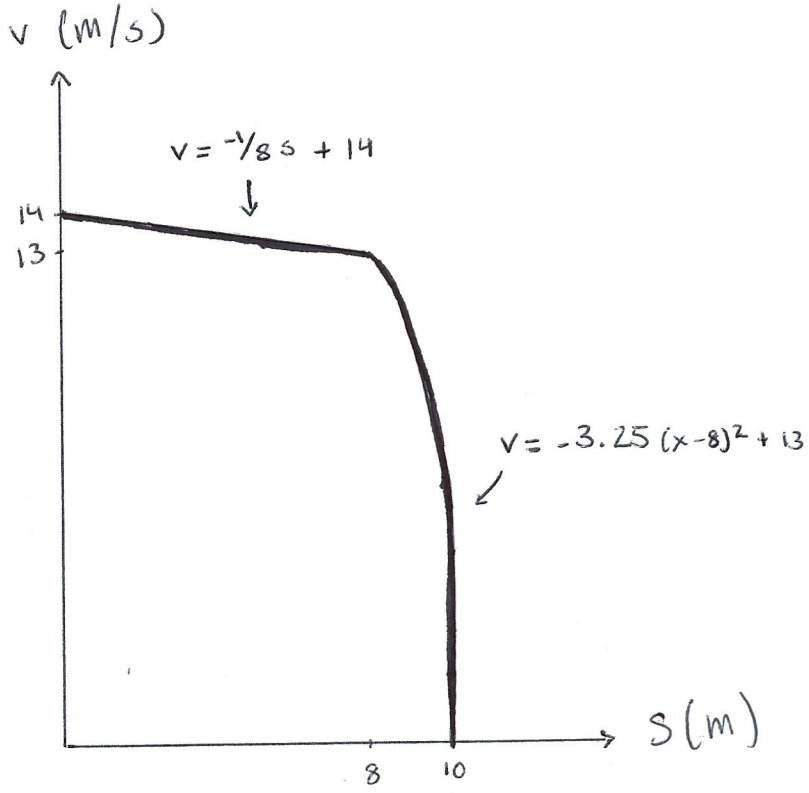
use $a\,ds = v\,dv$

$\Rightarrow a = v\, dv/ds = \left[-3.25\,(s-8)^2 + 13\right] \dfrac{d\left[-3.25\,(s-8)^2 + 13\right]}{ds}$

$a = 6.25\,(s-8)\left[3.25\,(s-8)^2 + 13\right]$

↳ Plug in the A, B, C is eqn (1) if $0 < s < 8$

↳ in eqn (2) is $8 < s < 10$


v (m/s)
v = -1/8 s + 14
14
13
v = -3.25 (x-8)² + 13
s (m)
8
10