

4D Linear Motion and Integration!

Date _____ Period _____

A particle moves along a coordinate line. Its acceleration function is $a(t)$ for $t \geq 0$. For each problem, find the position function $s(t)$.

1) $a(t) = 12t^2 - 84t; s(0) = 0; v(0) = 0$

2) $a(t) = -12t^2 + 84t; s(0) = 0; v(0) = 0$

3) $a(t) = -6t + 32; s(0) = 0; v(0) = -64$

4) $a(t) = 6t - 56; s(0) = 0; v(0) = 196$

5) $a(t) = -2; s(0) = -168; v(0) = 26$

6) $a(t) = 2; s(0) = 88; v(0) = -19$

7) $a(t) = -2; s(0) = -130; v(0) = 23$

8) $a(t) = 2; s(0) = 60; v(0) = -19$

9) $a(t) = 2; s(0) = 12; v(0) = -13$

10) $a(t) = 2; s(0) = 27; v(0) = -12$

Answers to 4D Linear Motion and Integration! (ID: 1)

- 1) $s(t) = t^4 - 14t^3$ 2) $s(t) = -t^4 + 14t^3$ 3) $s(t) = -t^3 + 16t^2 - 64t$
4) $s(t) = t^3 - 28t^2 + 196t$ 5) $s(t) = -t^2 + 26t - 168$ 6) $s(t) = t^2 - 19t + 88$
7) $s(t) = -t^2 + 23t - 130$ 8) $s(t) = t^2 - 19t + 60$ 9) $s(t) = t^2 - 13t + 12$
10) $s(t) = t^2 - 12t + 27$