



Find solutions for your homework

Search

home / study / engineering / mechanical engineering / mechanical engineering questions and answers / the velocity of a particle is $v = \{3i + (6-2t)j\}$...

Question: The Velocity of a particle is $V = \{3i + (6-2t)j\}$ m/s where t is in sec...

(2 bookmarks)

The Velocity of a particle is $V = \{3i + (6-2t)j\}$ m/s where t is in seconds. If $r = 0$ when $t = 0$, determine the displacement of the particle during the time interval $t=1$ to $t=3$

Expert Answer



Anonymous answered this
413 answers

Was this answer helpful?



4



0

Given,
velocity of particle, $V = 3i + (6-2t)j$

as,
 $V = \frac{dr}{dt}$ (where $r = \text{displacement}$).

then,
 $\frac{dr}{dt} = 3i + (6-2t)j$

or,
 $dr = 3dt i + (6-2t)dt j$

or,
 $\int_{r_1}^{r_2} dr = \int_1^3 3dt i + \int_1^3 (6-2t)dt j$

or,
 $(r_2 - r_1) = [3t]_1^3 i + [6t - t^2]_1^3 j$

$(r_2 - r_1) = 6i + 4j$ (where $r_2 = \text{displacement at } t = 3 \text{ sec.}$
 $r_1 = \text{displacement at } t = 1 \text{ sec.}$)

hence, displacement of particle during the time interval of $t = 1 \text{ sec}$ to $t = 3 \text{ sec}$ is,

$$\vec{d} = 6i + 4j \text{ (m)}$$

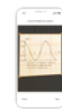
Comment >

Post a question

Answers from our experts for your tough homework questions

Continue to post

16 questions remaining



Snap a photo from your phone to post a question

We'll send you a one-time download link

888-888-8888

Text me

By providing your phone number, you agree to receive a one-time automated text message with a link to get the app. Standard messaging rates may apply.

My Textbook Solutions



Marketing Channels
8th Edition



Fluid Mechanics...
10th Edition



Fluid Mechanics...
3rd Edition

[View all solutions](#)

of the particle during the time interval $t_1 = 2$ s to $t_2 = 4$ s. $\Delta x = ?$ $\Delta y = ?$

A: [See answer](#) 93% (14 ratings)

Q: The velocity of a particle is $v = \{3i + (6 - 2t)j\}$ m/s, where t is in seconds. If $r = 0$ when $t = 0$. determine the displacement of the particle during the time interval $t = 1$ s to $t = 3$ s.

A: [See answer](#) 100% (1 rating)

[Show more](#)

Up next for you in Mechanical Engineering

For each of the dynamical systems shown below (a) find the poles and

For each of the dynamical systems shown below
 (i) find the poles and the zeros,
 (ii) plot them on the s-plane,
 (iii) write an expression for the general form of the step response without solving for the inverse Laplace transform, and
 (iv) state the nature of each response (overdamped, underdamped, and so on).

(a) $G(s) = \frac{1}{s^2 + 10s + 25}$
 (b) $G(s) = \frac{10s + 7}{s^2 + 10s + 20}$
 (c) $G(s) = \frac{20}{s^2 + 4s + 14}$
 (d) $G(s) = \frac{s + 2}{s^2 + 4}$
 (e) $G(s) = \frac{1}{s + 5}$

[See answer](#)

[See more questions for subjects you study](#)

Questions viewed by other students

Q: The velocity of a particle is $v = \{4i + (6 - 2t)j\}$ m/s, where t is in seconds. If $r = 0$ when $t = 0$, determine the displacement of the particle during the time interval $t = 1$ s to $t = 5$ s.

A: [See answer](#)

Q: he velocity of a particle is $v = \{3i + (6 - 2t)j\}$ m/s, where t is in seconds. Part A If $r = 0$ when $t = 0$, determine the displacement of the particle during the time interval $t = 0$ s to $t = 4$ s. Enter the x and y components of the displacement separated by a comma. $\Delta x, \Delta y =$

A: [See answer](#)

[Show more](#)

- [COMPANY](#)
- [LEGAL & POLICIES](#)
- [CHEGG PRODUCTS AND SERVICES](#)
- [CHEGG NETWORK](#)
- [CUSTOMER SERVICE](#)



