Did you start reading Ch 4 for today?

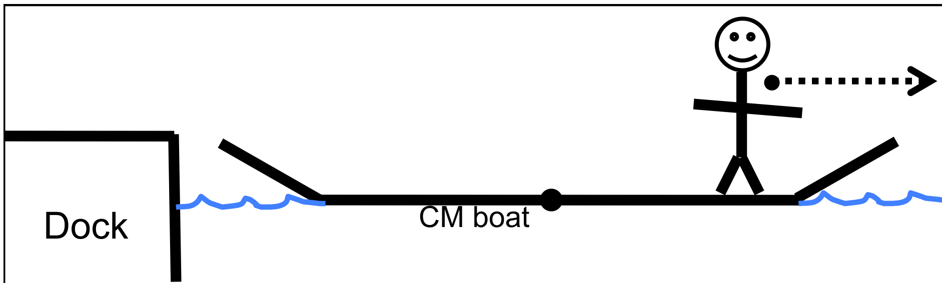
A) Yup, 4.1 and 4.2
B) Sort of... parts of it
C) No, but I plan to (after the exam!)
D) No, I tend to just read what I have to for solving homework problems
E) (None of these – something else best describes my answer here)

1

When I do read for class, I usually

A) Read the Taylor assignment (only)
B) Read the online lecture notes (only)
C) Both the above!
D) Mix of the above (but not really both, usually)
E) Other: none of the above really describes my answer.

2



You are walking on a flat-bottomed rowboat.

$\mathbf{v}_{you/dock} = \mathbf{v}_{you/boat} + \mathbf{v}_{boat/dock}$

or

$\mathbf{v} = \mathbf{v_0} + \mathbf{v}_{boat}$

3

Given a particle with mass m, velocity $\vec{v}$, $\vec{p} = m\vec{v}$, and $\vec{L} = \vec{r} \times \vec{p}$, what is $\vec{L} \cdot \vec{p}$?

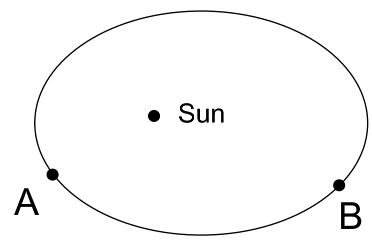
A) zero
B) a non-zero scalar
C) a vector, parallel to **p**
D) a vector, perpendicular to **p**
E) Need more info!

4

Given a planet with mass m, velocity $\vec{v}$, $\vec{p} = m\vec{v}$, and $\vec{L} = \vec{r} \times \vec{p}$ which is conserved:

Compare the planet's speed at points A and B:

A) Faster at A
B) Faster at B
C) Same



5

In which of the following situations is <u>nonzero net work done</u> on the specified object?

I- A *book* is pushed across a table at constant speed
II- A *car* goes around a corner at a constant 30 mph
III- An *acorn* is falling from a tree

A) i only B) ii only C) iii only
D) i and iii only E) Other/not sure

6

When doing line integrals in cartesian (2D), we use

$$d\vec{\mathbf{r}} = dx\,\hat{\mathbf{i}} + dy\,\hat{\mathbf{j}}$$

What should we use when in plane-polar coordinates?

A) $d\vec{\mathbf{r}} = dr\,\hat{r}$

B) $d\vec{\mathbf{r}} = d\phi\,\hat{\phi}$

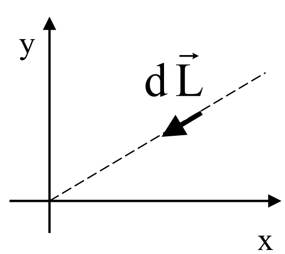
C) $d\vec{\mathbf{r}} = dr\,\hat{r} + d\phi\,\hat{\phi}$

D) $d\vec{\mathbf{r}} = dr\,\hat{r} + r\,d\phi\,\hat{\phi}$

E) Something entirely different/???

7

Consider an infinitesimal path element d**L** directed radially inward, toward the origin as shown. In spherical coordinates, the correct expression for d**L** is:



A) $d\vec{L} = +dr\,\hat{r}$

B) $d\vec{L} = -dr\,\hat{r}$

C) Neither of these.

cartesian: $d\vec{L} = dx\,\hat{x} + dy\,\hat{y}$

spherical: $d\vec{L} = dr\,\hat{r} + r\,d\theta\,\hat{\theta} + r\sin\theta\,d\phi\,\hat{\phi}$

When doing line integrals in cartesian, we use
$d\vec{\mathbf{r}} = dx\,\hat{\mathbf{i}} + dy\,\hat{\mathbf{j}} + dz\,\hat{\mathbf{k}}$

What should we use
when in spherical coordinates?

A) $d\vec{\mathbf{r}} = dr\,\hat{r}$

B) $d\vec{\mathbf{r}} = dr\,\hat{r} + d\theta\,\hat{\theta} + d\phi\,\hat{\phi}$

C) $d\vec{\mathbf{r}} = dr\,\hat{r} + r d\theta\,\hat{\theta} + r\,d\phi\,\hat{\phi}$

D) $d\vec{\mathbf{r}} = dr\,\hat{r} + r d\theta\,\hat{\theta} + r \sin\theta\,d\phi\,\hat{\phi}$

E) Something entirely different/???

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