I have seen the Eisntein summation notation before:

$$\mathbf{a} \cdot \mathbf{b} \equiv a_\mu b^\mu$$

A. Yes and I'm comfortable with it
B. Yes, but I'm just a little rusty with it
C. Yes, but I don't remember it it all
D. Nope

ANNOUNCEMENTS

- Poster printing (Free!)
  - Send your poster (PDF or PPT) to coeprint@msu.edu
  - Tell them you are in PHY 482
  - Make sure to give a couple of days for the print! (No weekends)
- Last Quiz (this Friday)
  - Use special relativity to investigate the effects of particle detection
  - Compare two events observed from different frames

True or False: The dot product (in 3 space) is invariant to rotations.

$$\mathbf{a} \cdot \mathbf{b} \equiv a_\mu b^\mu$$

A. True

B. False

C. No idea

Displacement is a defined quantity

$$\Delta x^{\mu} \equiv \left(x_A^{\mu} - x_B^{\mu}\right)$$

Is the displacement a contravariant 4-vector?

A. Yes
B. No
C. Umm...don't know how to tell
D. None of these.

Be ready to explain your answer.

The displacement between two events Δx^{μ} is a contravariant 4-vector.

Is $5\Delta x^{\mu}$ also a 4-vector?

A. Yes
B. No

The displacement between two events Δx^μ is a contravariant 4-vector.

Is $\Delta x^\mu / \Delta t$ also a 4-vector (where Δt is the time between in events in some frame)?

A. Yes
B. No

The displacement between two events Δx^{μ} is a contravariant 4-vector.

Is $\Delta x^{\mu}/\Delta\tau$ also a 4-vector (where $\Delta\tau$ is the proper time)?

A. Yes
B. No