In frame A, two events happen at the same place, separated by time T. Frame B moves with speed v relative to frame A. In frame B, the spacetime interval between these two events is

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B) $(c\gamma T)^2$

C) $(cT)^2$

D) $-(cT/\gamma)^2$

E) 0

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The calculation is similar to that for the space-separated interval, see lecture notes

A pulse of light travels between two events. The spacetime interval separating these two events is...

A) greater than zero

B) less than zero

C) zero

D) light can't travel between events

E) no way to tell

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Traveling at the speed of light, so $\Delta x = c\Delta t$

$s^2 = (c\Delta t)^2 - (\Delta x)^2 = (c\Delta t)^2 - (c\Delta t)^2 = 0$

What is the transformation between these two coordinate systems?

A) $x' = \cos\theta\, x + \sin\theta\, y$
$y' = \sin\theta\, x - \cos\theta\, y$

B) $x' = \cos\theta\, x + \sin\theta\, y$
$y' = -\sin\theta\, x + \cos\theta\, y$

C) $x' = \cos\theta\, x - \sin\theta\, y$
$y' = \sin\theta\, x + \cos\theta\, y$

D) $x' = \cos\theta\, x - \sin\theta\, y$
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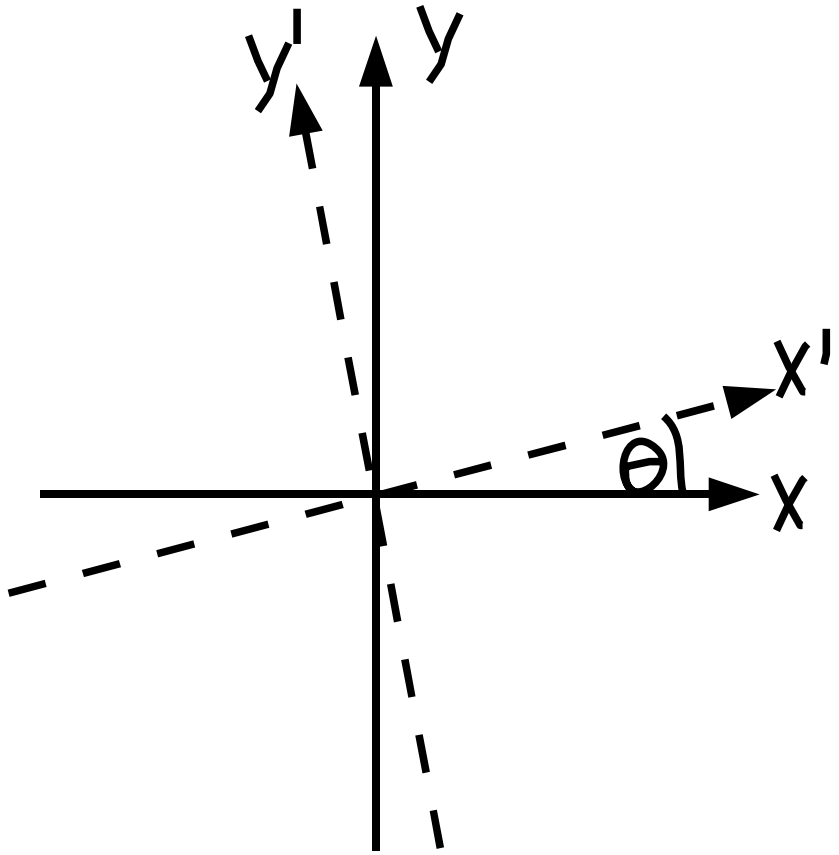

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