Consider the following two expressions, where t is the regular time and t prime is the retarded time. When are they the same?

$$V = \frac{\mu_0 c}{4\pi r}\hat{r} \cdot \frac{d\vec{p}(t')}{dt} \qquad\qquad V = \frac{\mu_0 c}{4\pi r}\hat{r} \cdot \frac{d\vec{p}(t')}{dt'}$$

A. Always 1

B. Never 0

C. Far from the source 11

D. Close to the source 31

Consider the following two expressions, where t is the regular time and t prime is the retarded time. When are they the same?

$$V = \frac{\mu_0 c}{4\pi r}\hat{r} \cdot \frac{d\vec{p}(t')}{dt} \qquad V = \frac{\mu_0 c}{4\pi r}\hat{r} \cdot \frac{d\vec{p}(t)}{dt}$$

A. Always 7

B. Never 3

C. Far from the source 4

D. Close to the source 30

Consider a linearly accelerating charge, with a speed approaching c. What happens?

A. Classically, it'll accelerate right past c, but relativity says it can't exceed c.

B. Neither classical E&M nor relativistic theory set a speed limit.

C. Classical E&M and relativistic theory both set a speed limit of c

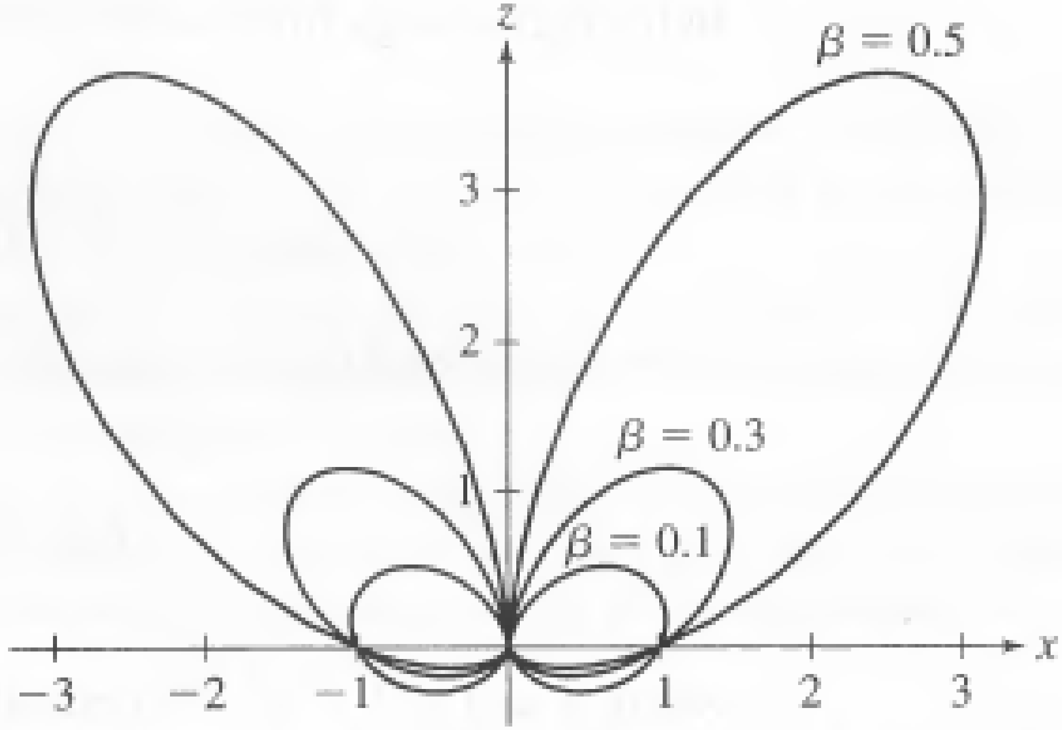
D. Classical theory sets a speed limit; relativity doesn't

Larmor formula

$$P = \frac{1}{4\pi\varepsilon_0}\frac{2q^2a^2}{3c^3}$$

Lienard's formula

$$P = \frac{1}{4\pi\varepsilon_0}\frac{2q^2a^2}{3c^3}\frac{1}{(1-\beta^2)^3}$$



z
x
β = 0.5
β = 0.3
β = 0.1
3
2
1
−3
−2
−1
1
2
3