

(4pts) #5 While watching the double feature with this gal at the drive-in theater, Sam leaves the radio in his '57 Chevy on. The radio consumes 1 A of current. To save enough money for the movie, Sam decided not to replace his old battery which has only 20,000 coulombs of charge left. Starting the car engine will require 6000 coulombs of charge. The double feature lasts 4 hours.

- (2pts) a) Will Sam be able to start the car after the movie?
 (2pts) b) If not, when should he have left? (hrs and mins)

a) $I = 1 \text{ A}$

$$q_{\text{Total}} = 20,000 \text{ Coulombs}$$

$$q_{\text{start}} = 6,000 \text{ Coulombs}$$

$$t = 4 \text{ hours}$$

$$q_{\text{Total}} - q_{\text{start}} = 20K - 6K = 14,000 \text{ Coulomb}$$

He must consume 14,000 Coulombs or less in the 4 hour movie to make it home.

$$q = (3,600)(4) = 14,400 \text{ Coulombs}$$

400 Coulombs over the limit!

No

b) $\frac{400 \text{ C}}{3,600 \text{ C}} = \frac{1}{9} \quad \frac{1}{9} (60 \text{ min}) = 6.67$

0 hrs and 7 minutes ago