

Physics Written Task

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Partners: Whole class

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1 angular velocity

Orbital angular velocity for the earth is two pie over time. The speed of the earth is equal angular velocity times radius. Centripetal acceleration is speed square over radius.

1.1 Important Facts

- E fields are strong when lines of equal potential are close.
- By increasing the area or decreasing d, the more capacitance we will have.
- Electric field is in the same direction as current and applies force and moves the particles.
- Increase voltage = Increase E field = Increase F_e = Increase drift = Increase current
- One ampere is the magnitude of the current which, when flowing in each of two long parallel wires one meter apart, results in a force between the wires of exactly $2 \times 10^{-7} \text{N}$ per meter of length.

2 Formulas

Electric field

$$E = -\Delta V / \Delta X$$

$$C = Q/V$$

$$I = \Delta Q / \Delta T$$

$$V = IR$$

$$P = IV$$

Individual Charge

$$F = q * v * B$$

Wire Charge

$$F = I * L * B$$

In series of resistances

$$I_1 = I_2 = I_3$$

$$V(\text{total}) = V_1 + V_2 + V_3$$

In parallel resistances

$$I_1 + I_2 + I_3 = I(\text{total})$$

$$V(\text{total}) = V_1 = V_2 = V_3$$

$$\text{Torque} = r * F$$

Torque net = I times initial acceleration Electricity

Point charges:

$$F = qQK/r^2$$

$$E = QK/r^2$$

$$PE = qQk/r$$

$$V = QK/r$$

General

$$E = -\Delta v / \Delta x$$

$$F = Eq$$

$$PE = qV$$

CAPACITOR

$$I = \Delta Q / \Delta t$$

Circular motion:
Angular velocity

$$w = \Delta \textit{teta} / \Delta t$$

Angular acceleration

$$\alpha = \Delta w / \Delta t$$

Centripetal acceleration

$$Q = V^2 / r$$

Tangential speed

$$V = W r$$

Gravity

$$-F = mMG / r^2$$

$$-PE = -mMG / r$$

$$F = qVB$$

$$F = ILB$$

$$B_{\textit{wire}} = \mu I / 2\pi r$$

$$I_{\textit{hoop}} = MR^2$$

$$I_{\textit{disk}} = MR^2 / 2$$

References