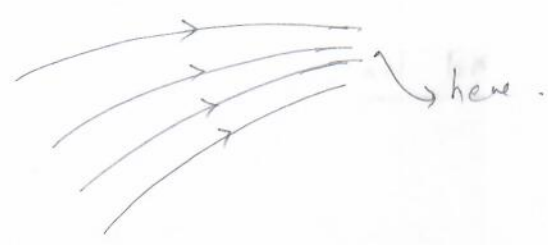


Solutions

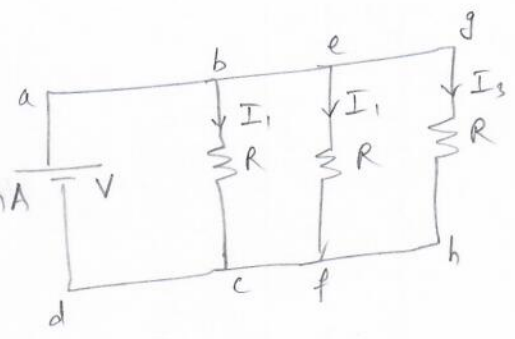
Problem 1



force is large where the density of lines of force is more.

Problem 2

loop abcda: $V = I_1 R$
 $I_1 = \frac{V}{R} = \frac{10.0}{30.0k} = 0.333 \text{ mA}$
 $I_1 = I_2 = I_3 = 0.333 \text{ mA}$



Problem 3

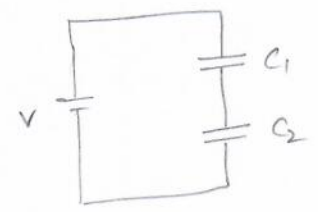
change in magnetic is zero.
So, induced current is zero.

Problem 4

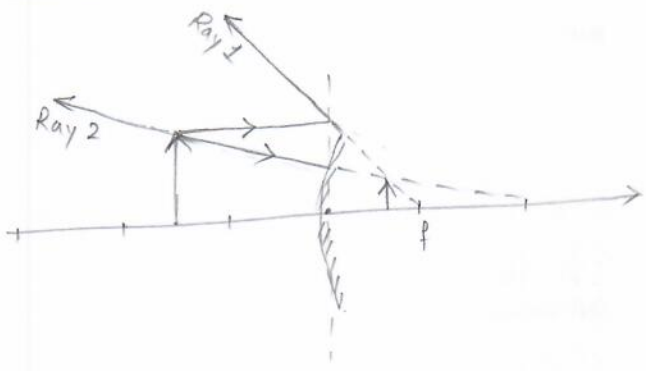
virtual.

Problem 5

$$Q_1 = Q_2$$
$$C_1 V_1 = C_2 V_2$$
$$\frac{V_1}{V_2} = \frac{C_2}{C_1} = \frac{20.0 \mu\text{F}}{10.0 \mu\text{F}} = 2.00$$



Problem 6



(a) -20.0cm

(b) $\frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f}$

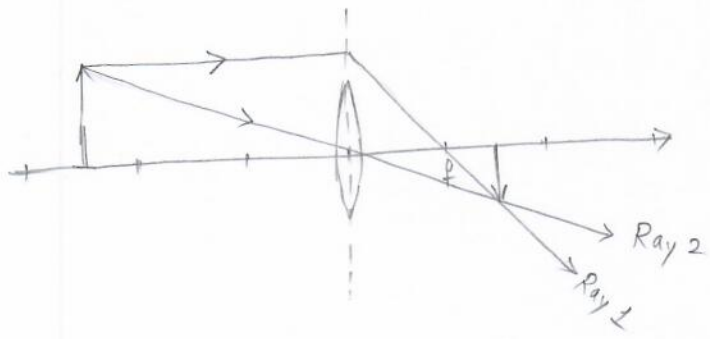
$\frac{1}{d_i} = \frac{1}{-10.0} - \frac{1}{15} = -\frac{5.0}{30.0}$

$d_i = -6.0\text{cm}$ (virtual image)

(c) $m = -\frac{d_i}{d_o} = -\frac{(-6.0\text{cm})}{(15.0\text{cm})} = +0.40$
upright and smaller.

(d) $h_i = m h_o = 0.40\text{cm}$

Problem 7



(a) $\frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f}$

$\frac{1}{d_i} = \frac{1}{+10.0} - \frac{1}{25.0}$

$d_i = \frac{50.0}{3} = +16.7\text{cm}$

(real image)

(b) $m = -\frac{d_i}{d_o} = -\frac{(+16.7\text{cm})}{(+25.0\text{cm})} = -0.67$
inverted and smaller

(c) $h_i = m h_o$
 $= -0.67\text{cm}$