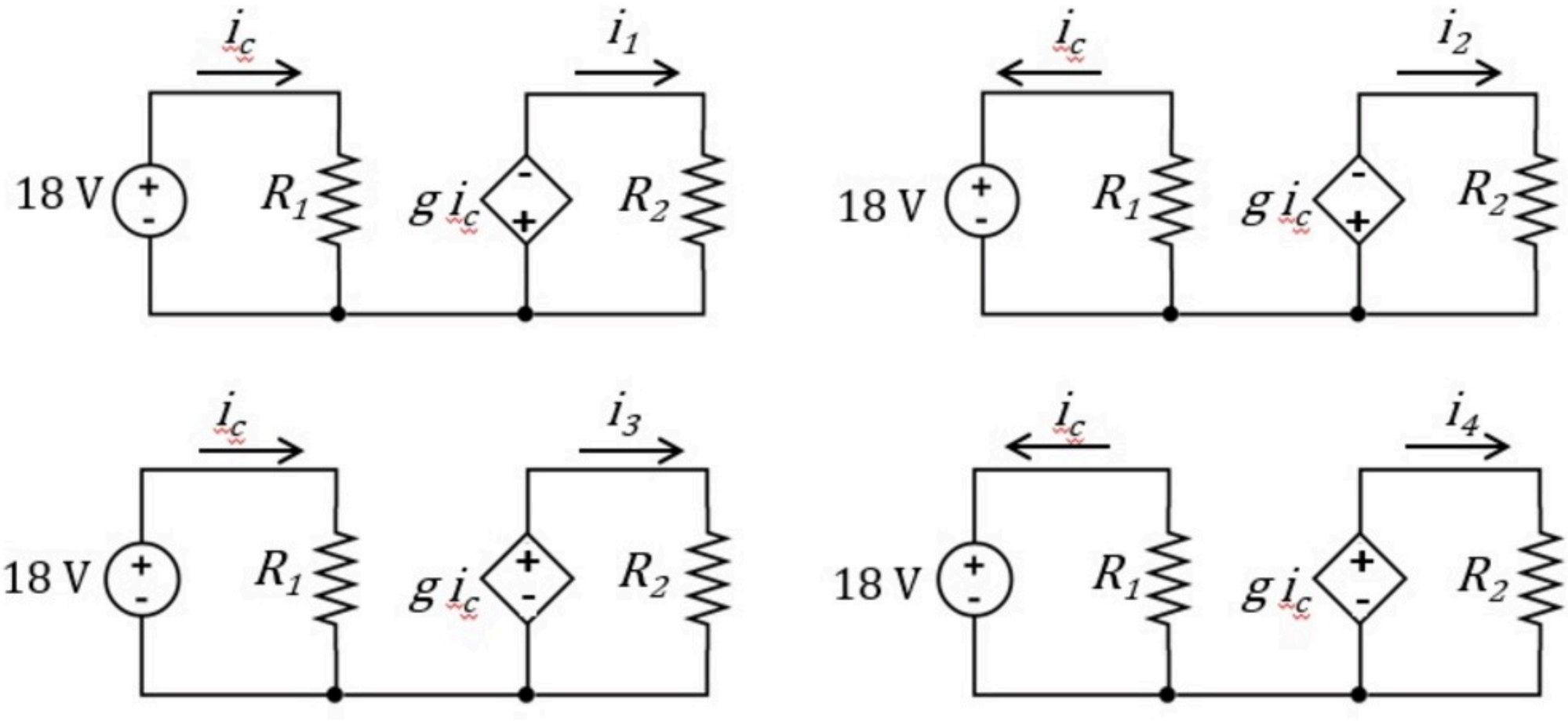
Basic concepts 010

Problem has been graded.

Find the currents i_1, i_2, i_3 and i_4.



Given Variables:

R_1 : 4 ohm

R_2 : 9 ohm

g : 6 V/A

Calculate the following:

i_1 (A) :

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i_2 (A) :

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i_3 (A) :

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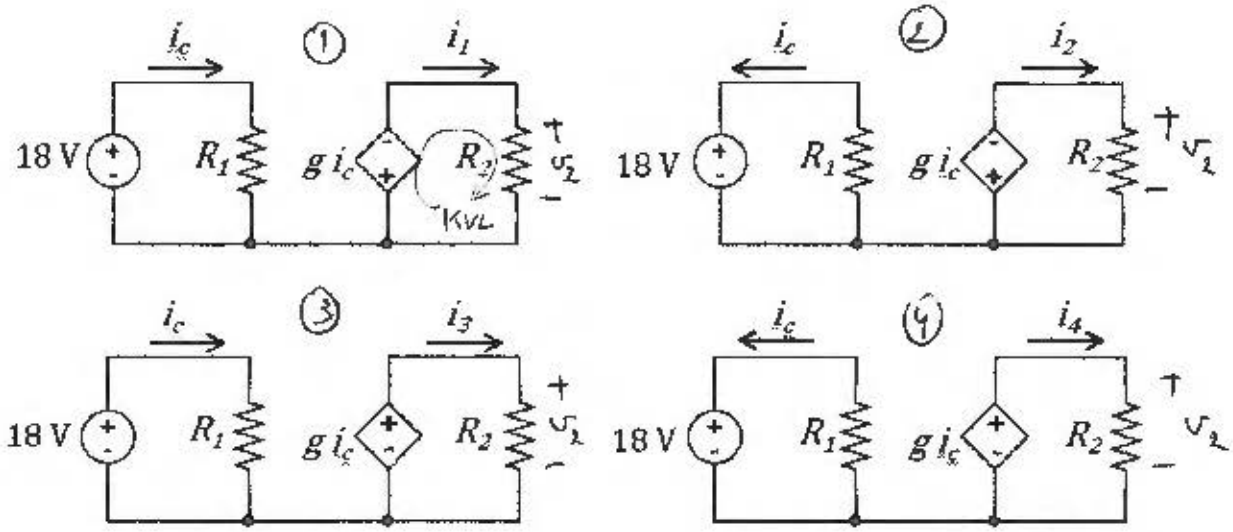
i_4 (A) :

Hint: Check the signs of the sources and the current arrows

Find the currents i_1, i_2, i_3 and i_4.



R1 = 4 Ω

R2 = 3 Ω

g = 2 V/A

in ①: $i_c = \frac{18}{R_1} = 4.5\ A$

KVL in right part: $g i_c + v_2 = 0$

$\Rightarrow v_2 = -g i_c = -9\ V$

$i_1 = \frac{v_2}{R_2} = \frac{-9}{3} \Rightarrow \boxed{i_1 = -3\ A}$

in ②: $i_c = -4.5\ A$

$v_2 = -g i_c = 9\ V$

$i_2 = \frac{v_2}{R_2} = \frac{9}{3}$

$\boxed{i_2 = 3\ A}$

in ③: $i_c = 4.5\ A$

$v_2 = g i_c = 9\ V$

$i_3 = \frac{v_2}{R_2} = \frac{9}{3}$

$\boxed{i_3 = 3\ A}$

in ④: $i_c = -4.5\ A$

$v_2 = g i_c = -9\ V$

$i_4 = \frac{v_2}{R_2} = \frac{-9}{3}$

$\boxed{i_4 = -3\ A}$