Put your final answers on this sheet and attach any additional sheets behind. You must include your work to get full credit.

Use the mesh-current method to find the indicated mesh current in the circuit shown below.

\[ i_{R2} = 3.89 \text{ mA} \]

KVL around center mesh:

\[ -N_{R1} - N_{R2} - N_{R3} = 0 \quad (N_{R1} + N_{R2} + N_{R3} = 0) \]

\[ N_{R1} = R_1 \cdot i_{R1} = R_1 (i_a - I_{S1}) \]

\[ N_{R2} = R_2 \cdot i_{R2} = R_2 i_a \]

\[ N_{R3} = R_3 \cdot i_{R3} = R_3 (i_a - I_{S2}) \]

\[ R_1 (i_a - I_{S1}) + R_2 i_a + R_3 (i_a - I_{S2}) = 0 \]

\[ (R_1 + R_2 + R_3) i_a = R_1 I_{S1} + R_3 I_{S2} \]

\[ (9k\Omega) i_a = (2k\Omega)(10\text{ mA}) + (3k\Omega)(5\text{ mA}) \]

\[ i_a = \frac{20V + 15V}{9k\Omega} = 3.89 \text{ mA} \]