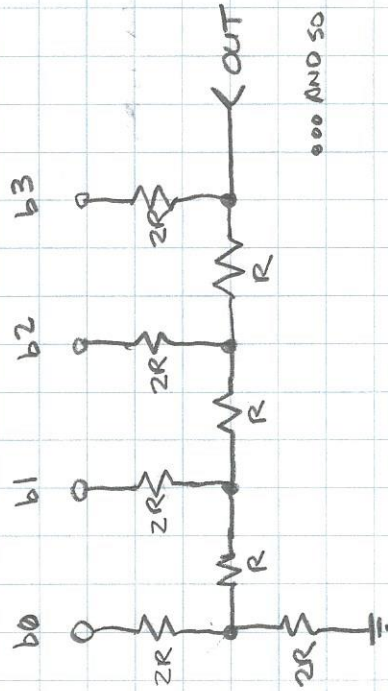


R-2R RESISTOR "LADDER" NETWORKS

- USED FOR BASIC DIGITAL TO ANALOG CONVERSION (DAC)



... AND SO ON...

PROPERTIES

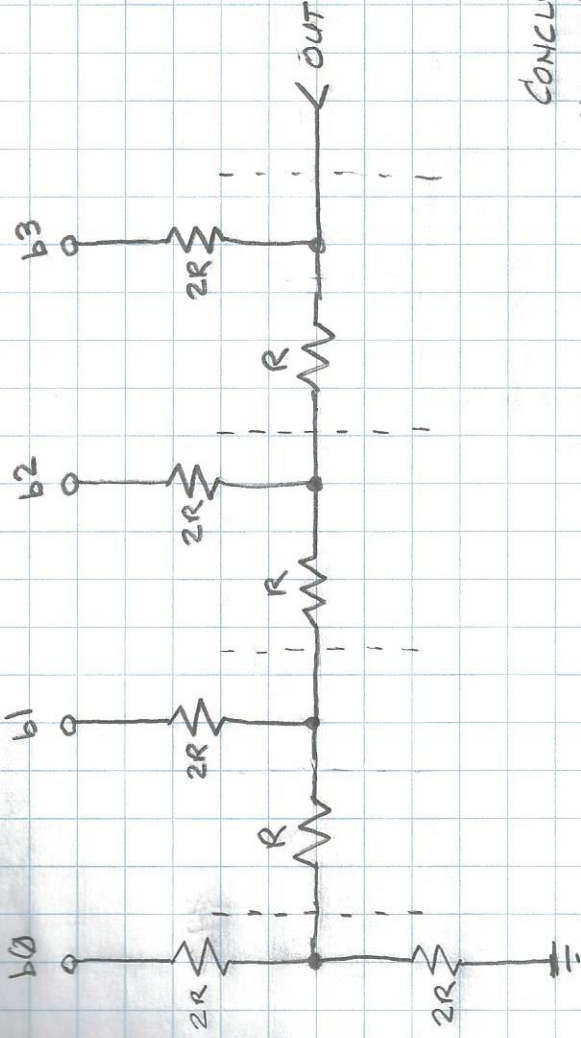
- EACH BIT IS "BINARY" WEIGHTED TO OUTPUT
- OUTPUT RESISTANCE IS R
- ONLY TWO VALUES OF RESISTANCE USED (OR ONE!)
↳ MAKES FOR GOOD ACCURACY

- ANALYSIS IS EASY USING:

- 1) THEVENIN EQUIVALENT CIRCUITS
- 2) SUPERPOSITION PRINCIPLE

UNZAEW

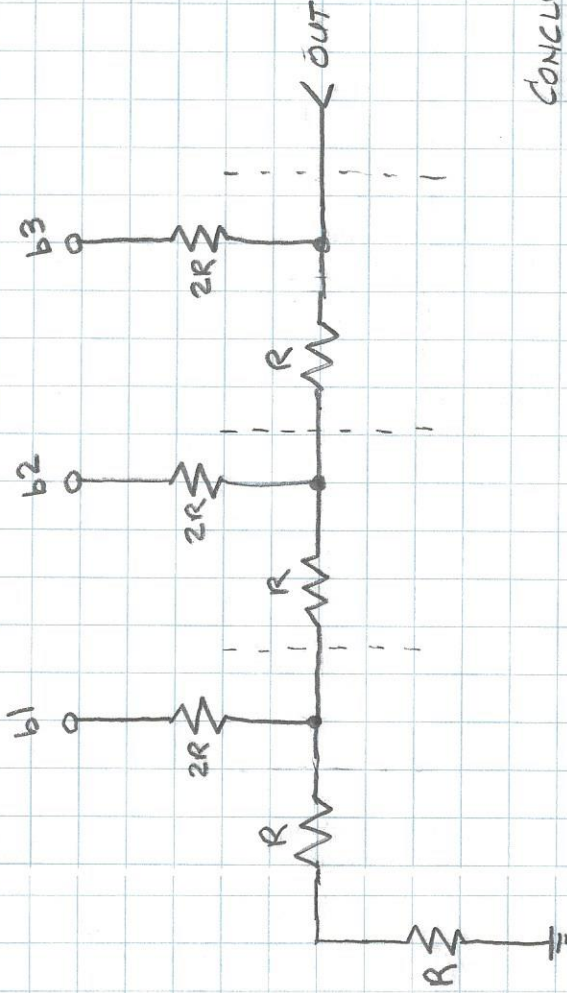
THEVENIN EQUIVALENT CIRCUITS TO CALCULATE RESISTANCE



CONCLUSION -
- NO MATTER HOW MANY
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RESISTANCE IS ALWAYS R

W2AEU

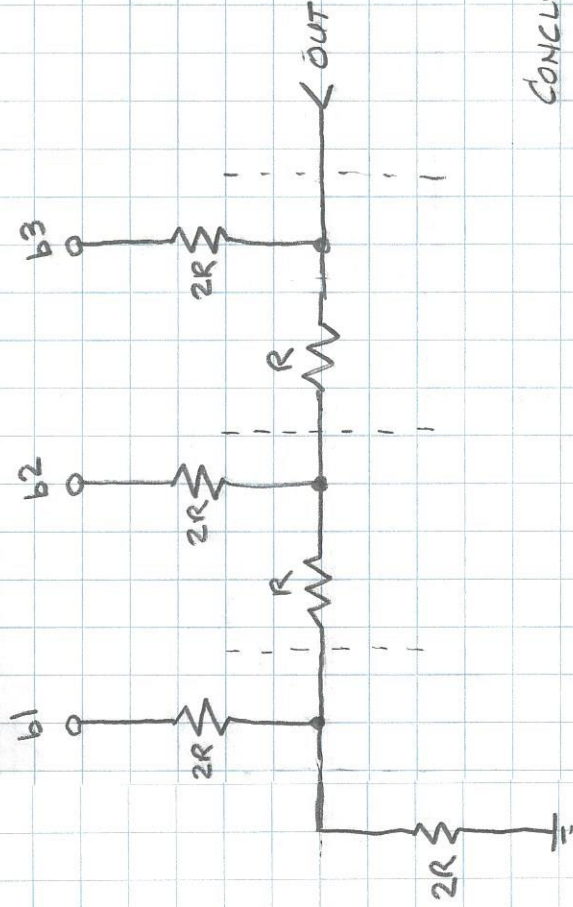
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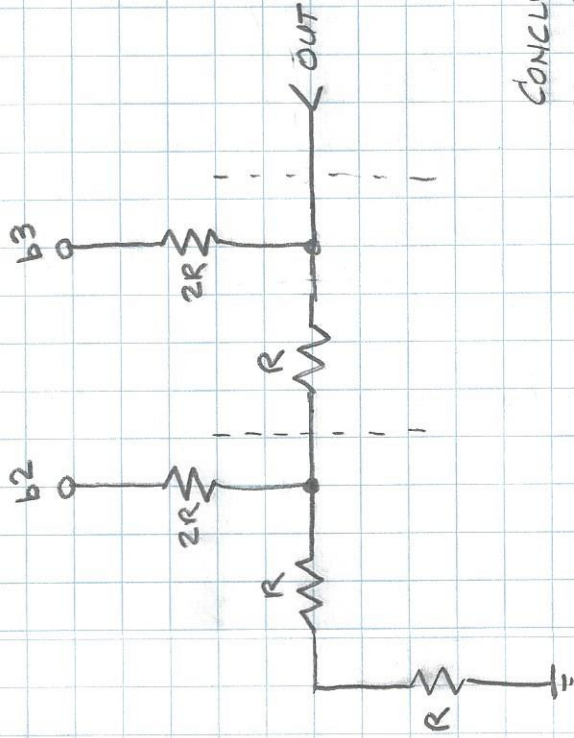
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CONCLUSION -

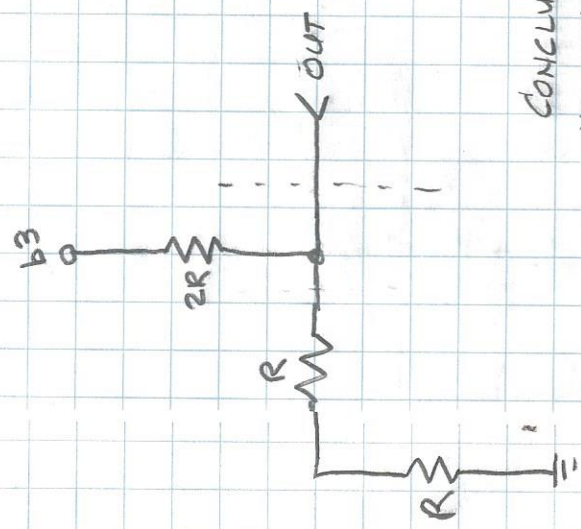
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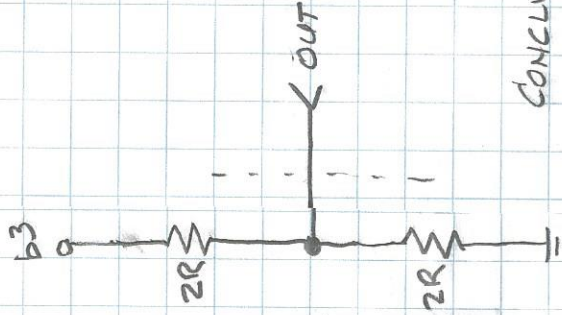
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WHICH IS SIMPLY

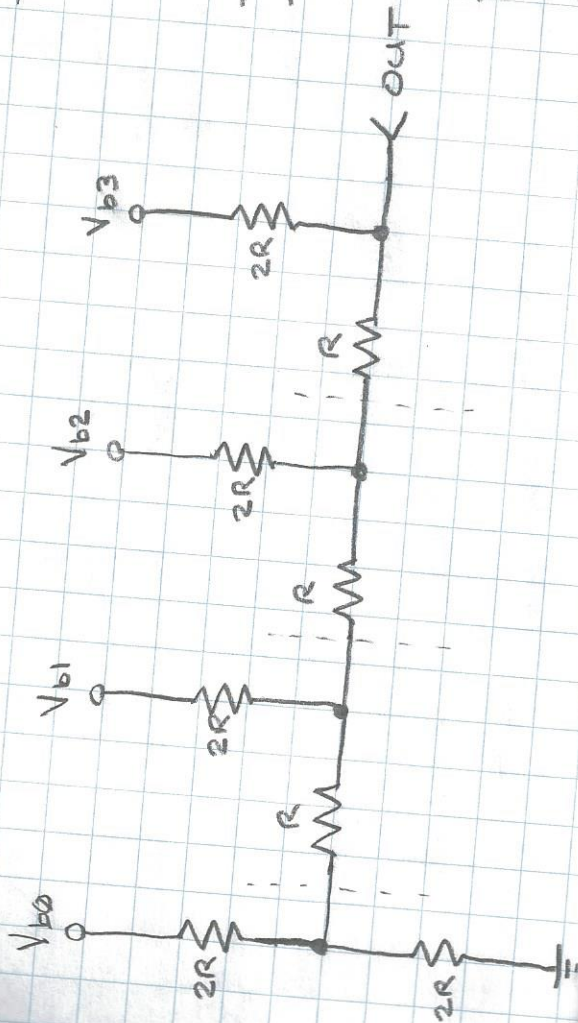


WDAEW

THEVENIN & SUPERPOSITION TO CALCULATE VOLTAGE

- SUPERPOSITION
- SHORT ALL VOLTAGE SOURCES EXCEPT THE ONE BEING CALCULATED
 - DO THIS FOR EACH
 - SUM THE RESULTS

- THEVENIN EQUIV.
- EQUIV. RESISTANCE
 - OPEN CIRCUIT VOLTAGE

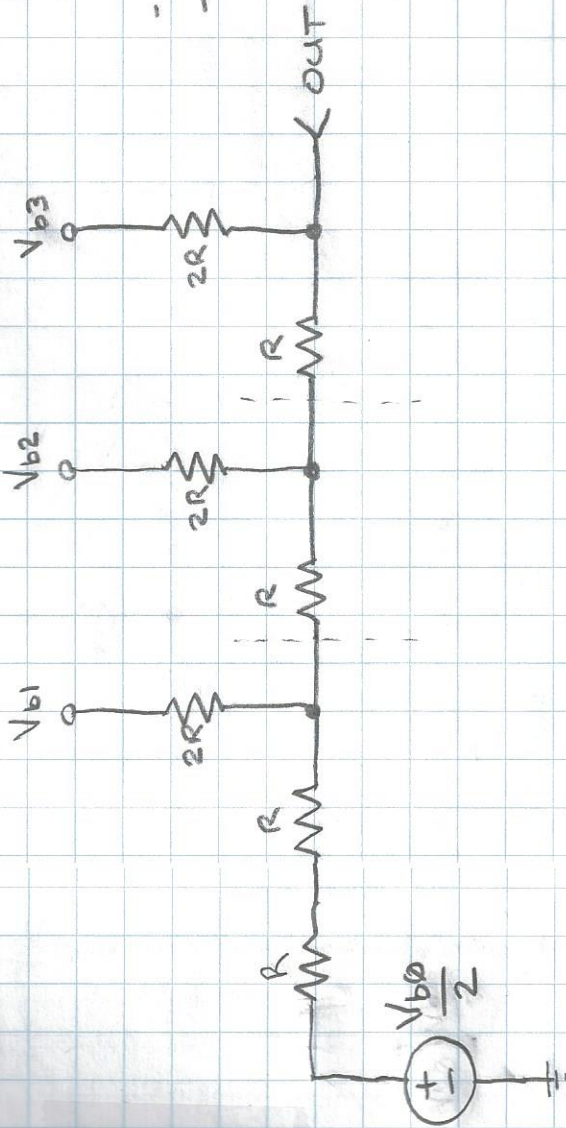


W2AEW

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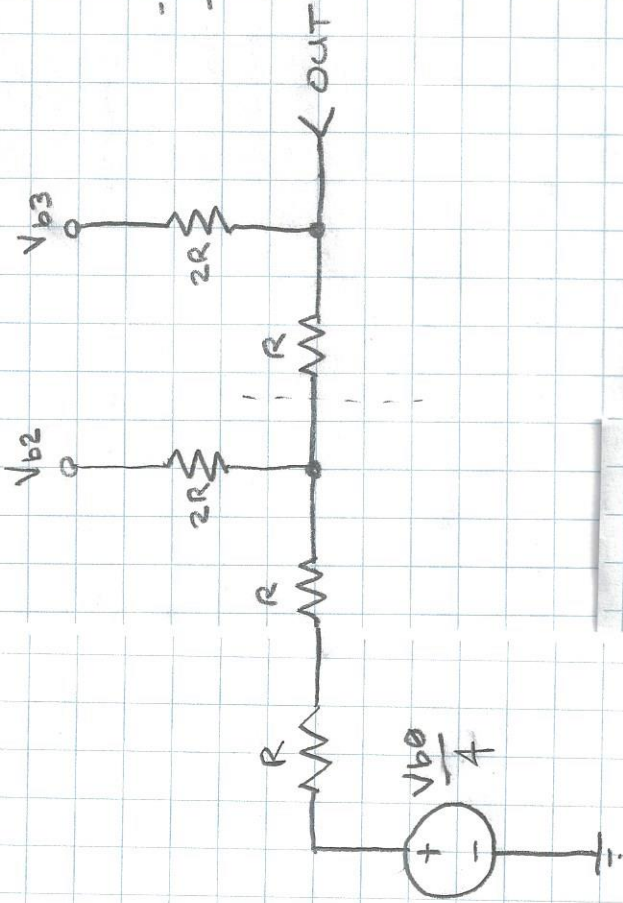
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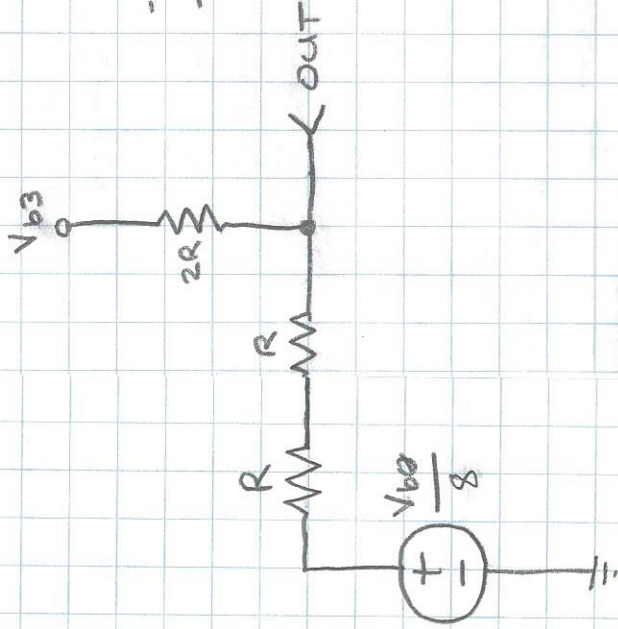
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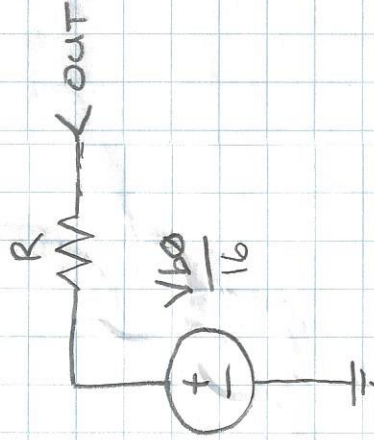
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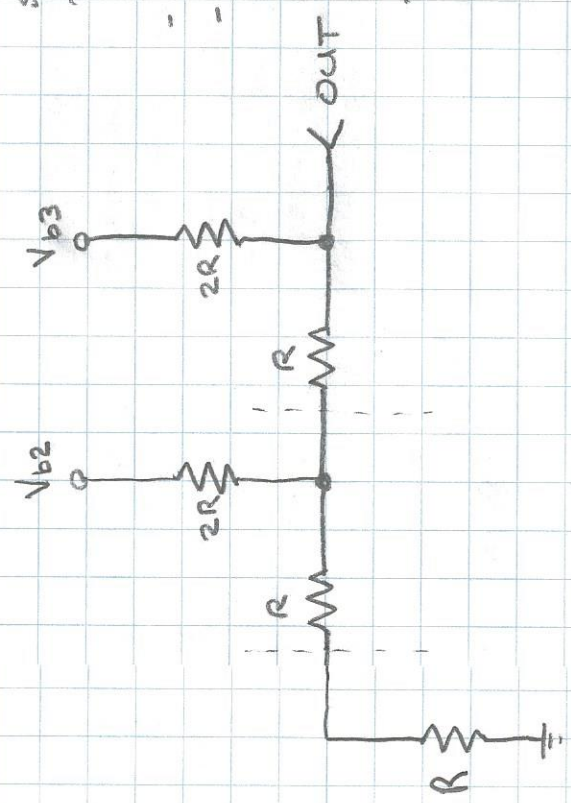
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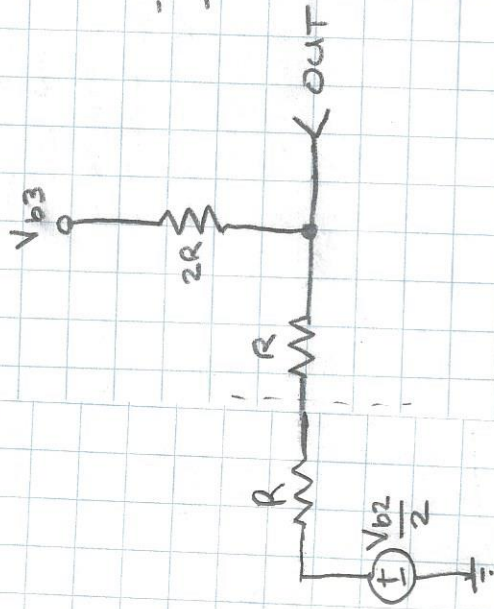


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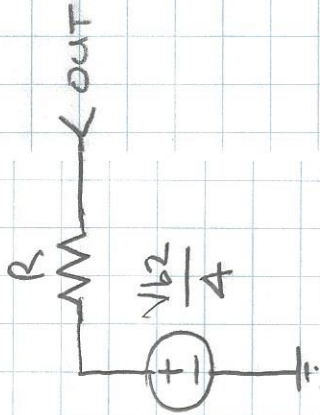
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$$V_{out} = \frac{V_{oc}}{16} + \frac{V_{1}}{8} + \frac{V_{2}}{4} + \frac{V_{3}}{2}$$

WZAEW