|  |  |
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| Name:Click or tap here to enter text. | Date:Click or tap to enter a date. |

Please watch the following short video tutorials (each less than 3 minutes) on operational amplifiers and answer the multiple-choice questions below:

* [Frequency Response of Op Amp Circuits](https://www.allaboutcircuits.com/video-tutorials/op-amp-basics-frequency-response/)
* [Basic](https://www.allaboutcircuits.com/video-tutorials/basic-amplifier-configurations-non-inverting-amplifier/) Amplifier Configurations: The Non-Inverting Amplifier
* [Basic Amplifier Configurations: The Inverting Amplifier](https://www.allaboutcircuits.com/video-tutorials/the-basic-op-amp-inverting-amplifier/)

# Non-Inverting Amplifier

## What is the expected gain of the circuit shown below?



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| --- |
| Click or tap here to enter text. |

## What change to the circuit (in the previous question) would cause the gain to be +100?

|  |
| --- |
| Click or tap here to enter text. |

# Inverting Amplifier

## What is the expected gain of the circuit shown below?



|  |
| --- |
| Click or tap here to enter text. |

## What change to the circuit (in the previous question) would cause the gain to be -100?

|  |
| --- |
| Click or tap here to enter text. |

# Variable Gain Amplifier

In lab you will build a variable-gain, non-inverting amplifier using only one side of a potentiometer $(R\_{3})$ and leaving the other side unconnected as shown below.



The feedback resistor consists of a $1kΩ$ fixed resistor in series with the $100kΩ$ potentiometer. Determine the equivalent gain values in dB and the required value of the potentiometer $R\_{3}$ to produce that gain and complete the table below.

|  |  |  |
| --- | --- | --- |
| Gain $\frac{V\_{out}}{V\_{in}}$ | Gain $dB=20∙log⁡(|V\_{out}/V\_{in}|)$ | $$R\_{3} (kΩ)$$ |
| 2 | Click or tap here to enter text. | Click or tap here to enter text. |
| 4 | Click or tap here to enter text. | Click or tap here to enter text. |
| 8 | Click or tap here to enter text. | Click or tap here to enter text. |
| 16 | Click or tap here to enter text. | Click or tap here to enter text. |
| 32 | Click or tap here to enter text. | Click or tap here to enter text. |
| 64 | Click or tap here to enter text. | Click or tap here to enter text. |