Started on	Thursday, 21 September 2017, 11:49 AM
State	Finished
Completed on	Thursday, 21 September 2017, 11:50 AM
Time taken	18 secs
Grade	**0.0** out of 10.0 (**0**%)

Question 1

Not answered

Mark 0.0 out of 2.0

If the full-power bandwidth is 11.2 kHz for an operational amplifier with a maximum output voltage swing of ± 5.4 V, then what is the slew-rate for this opamp in V/μsec?

Answer:

The correct answer is: 0.38

Question 2

Not answered

Mark 0.0 out of 2.0

The Slew Rate of an integrated circuit opamp is the maximum frequency which the opamp can amplify with a gain larger than one.

Select one:

- True
- False

The correct answer is 'False'.

Question 3

Not answered

Mark 0.0 out of 2.0

Errors in the output voltage of an actual integrated circuit operational amplifier can be caused by :

Select one:

- a. None of these
- b. High bandwidth for high frequency signals
- c. Zero offset voltages and currents
- d. Low slew rate for signals which change quickly
- e. High open-loop voltage gain

The correct answer is: Low slew rate for signals which change quickly

Question 4

Not answered

Mark 0.0 out of 2.0

If the input voltage of an integrated circuit opamp changes too quickly, then the output voltage of the opamp may not be able to keep up and only change exponentially at the opamp's slew rate.

Select one:

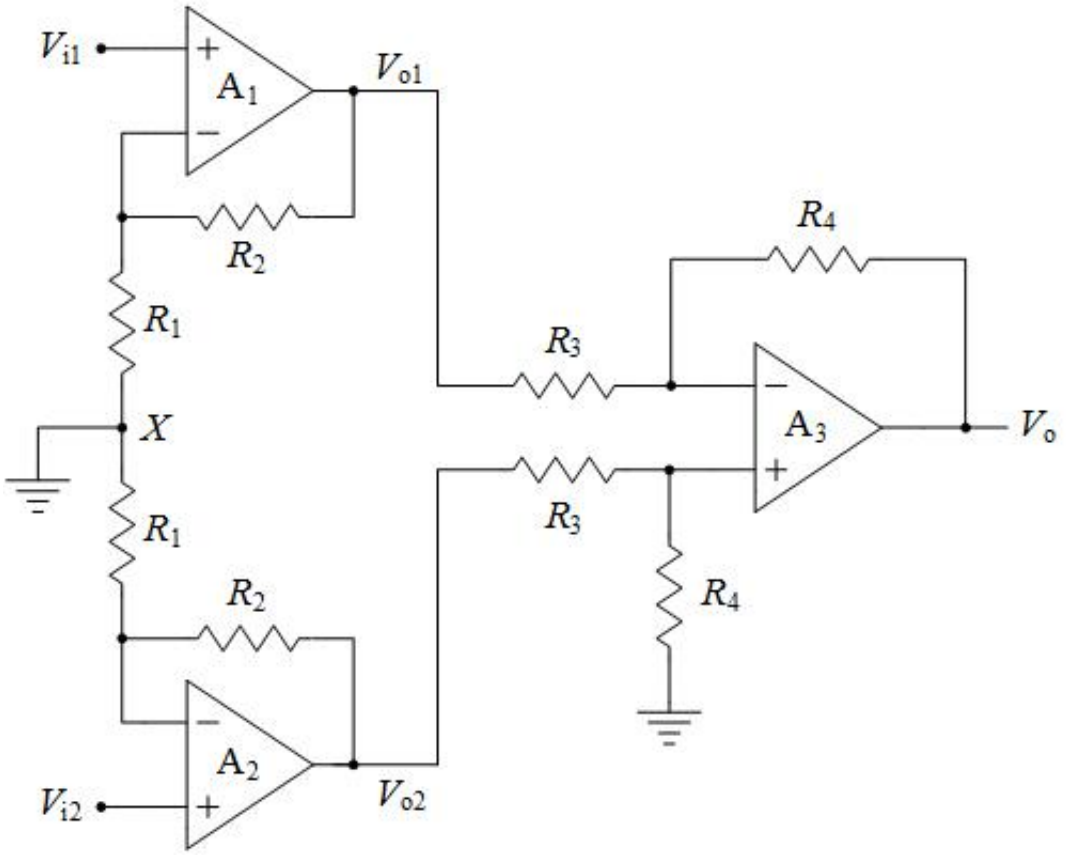
- True
- False

The correct answer is 'False'.

Question 5

Not answered

Mark 0.0 out of 2.0



What is the differential-mode voltage gain, Adm, in dB from the differential input voltage, Vidm = Vi2-Vi1, to the output for the operational amplifier circuit shown? Assume that all the opamps are ideal, and use R1 = 2.2kΩ, R2 = 42.9kΩ, R3 = 2.2kΩ and R4 = 42.4kΩ.

Answer:

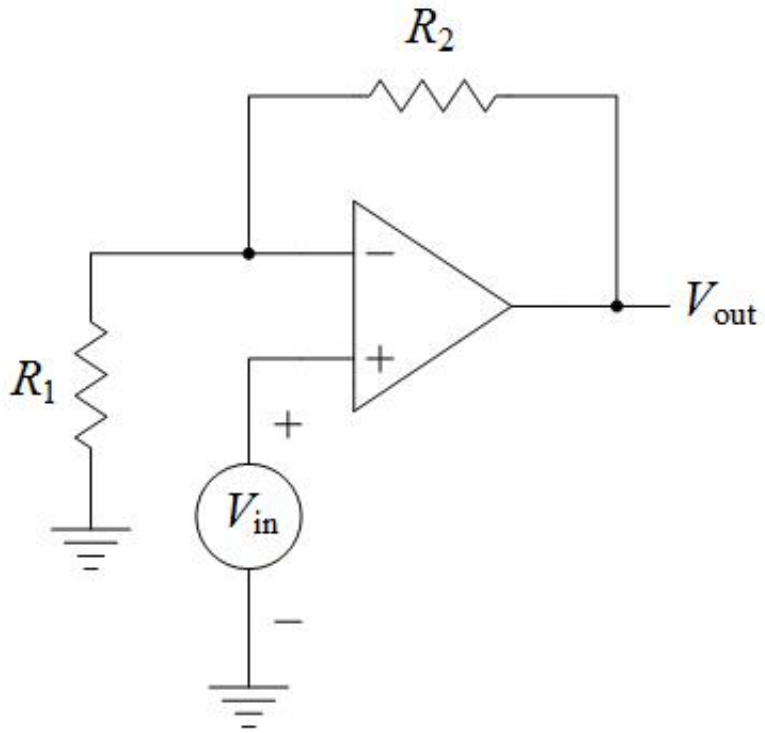
The correct answer is: 51.93

Started on	Thursday, 21 September 2017, 11:51 AM
State	Finished
Completed on	Thursday, 21 September 2017, 11:51 AM
Time taken	8 secs
Grade	**0.0** out of 10.0 (**0**%)

Question 1

Not answered

Mark 0.0 out of 2.0



What is the output resistance in kilohms for the operational amplifier circuit shown? Assume that the opamp is ideal, and use R1 = 5.1kΩ and R2 = 66.9kΩ.

Answer:

The correct answer is: 0.0

Question 2

Not answered

Mark 0.0 out of 2.0

The ideal opamp assumption that there is zero current into the + and – inputs is based on
the fact that actual operational amplifiers are designed to have very high input resistance.

Select one:

- True
- False

The correct answer is 'True'.

Question 3

Not answered

Mark 0.0 out of 2.0

In an instrumentation amplifier, if the connection between the resistors in the first stage and ground is removed then which of the following will improve?

Select one:

- a. The common-mode rejection ratio
- b. All of these
- c. The bandwidth
- d. The output resistance
- e. The input resistance

The correct answer is: The common-mode rejection ratio

Question 4

Not answered

Mark 0.0 out of 2.0

The output voltage of an integrated circuit opamp is limited to no less than the power supply voltages it uses.

Select one:

- True
- False

The correct answer is 'False'.

Question 5

Not answered

Mark 0.0 out of 2.0

If the output voltage for an operational amplifier can only swing up to 1.3V below the positive power supply voltage, and down to 1.6V above the negative power supply voltage, then at what DC voltage must the opamp output be biased in order to be able to output the largest peak-to-peak sine wave possible without clipping? Use VCC = +10V and VEE = -0V.

Answer:

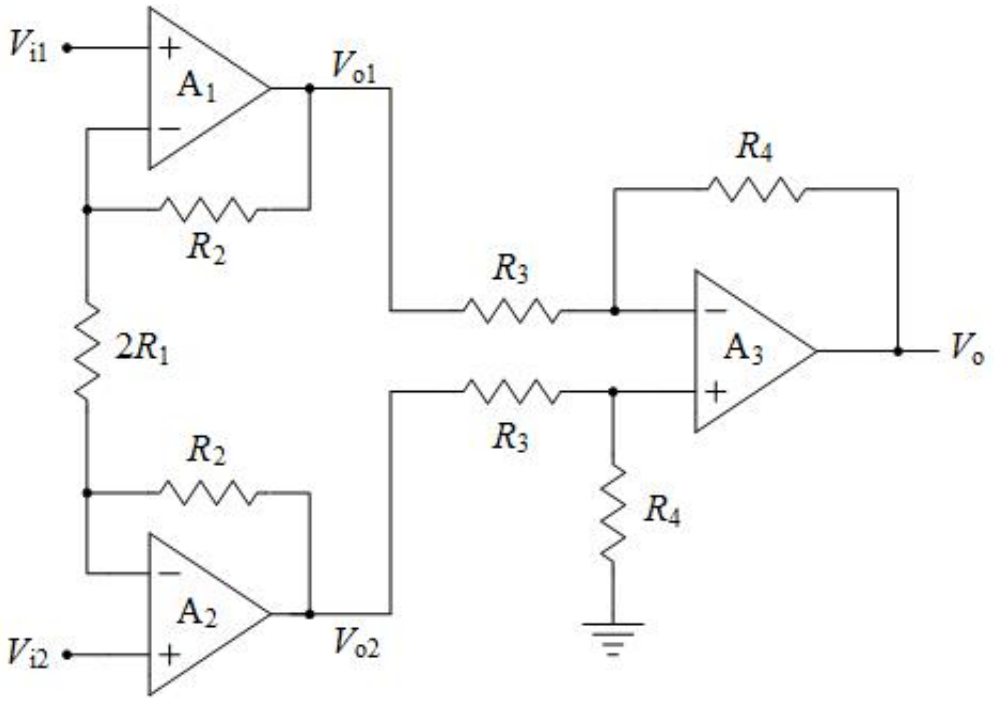
The correct answer is: 5.15

Started on	Thursday, 21 September 2017, 11:52 AM
State	Finished
Completed on	Thursday, 21 September 2017, 11:53 AM
Time taken	8 secs
Grade	**0.0** out of 10.0 (**0**%)

Question 1

Not answered

Mark 0.0 out of 2.0



What is the differential-mode voltage gain, Adm, in V/V from the differential input voltage, Vidm = Vi2-Vi1, to the output for the operational amplifier circuit shown? Assume that all the opamps are ideal, and use R1 = 9.5kΩ, R2 = 32.9kΩ, R3 = 6.0kΩ and R4 = 46.2kΩ.

Answer:

The correct answer is: 34.37

Question 2

Not answered

Mark 0.0 out of 2.0

The common-mode input voltage for an opamp is the difference between the + and – input voltages.

Select one:

- True
- False

The correct answer is 'False'.

Question 3

Not answered

Mark 0.0 out of 2.0

Non-ideal effects in real integrated circuit operational amplifiers can cause :

Select one:

- a. The difference in voltage between the + and – inputs to decrease as the signal frequency increases
- b. The input currents into the + and – inputs to be greater than zero
- c. The difference in voltage between the + and – inputs to be zero
- d. The output voltage to be equal to zero when the voltage between the + and – inputs is zero
- e. None of these

The correct answer is: The input currents into the + and – inputs to be greater than zero

Question 4

Not answered

Mark 0.0 out of 2.0

If an instrumentation amplifier has a connection between the resistors in the first stage and ground, then it will have a much higher common-mode gain than it would if this connection to ground is removed.

Select one:

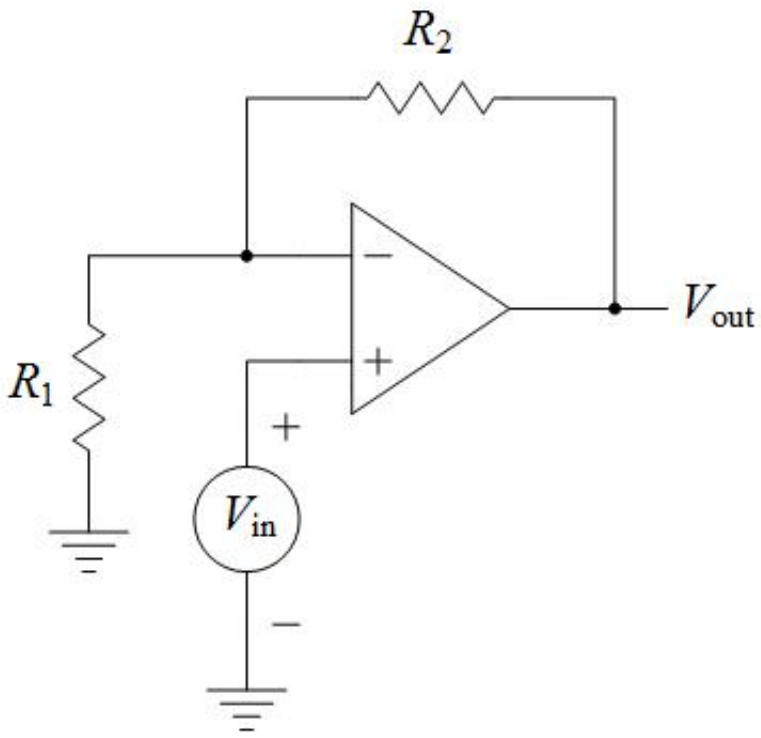
- True
- False

The correct answer is 'True'.

Question 5

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what value must R2 be in kilohms in order to set the voltage gain to 36.0 dB ? Assume that the opamp is ideal, and use R1 = 2.5kΩ.

Answer:

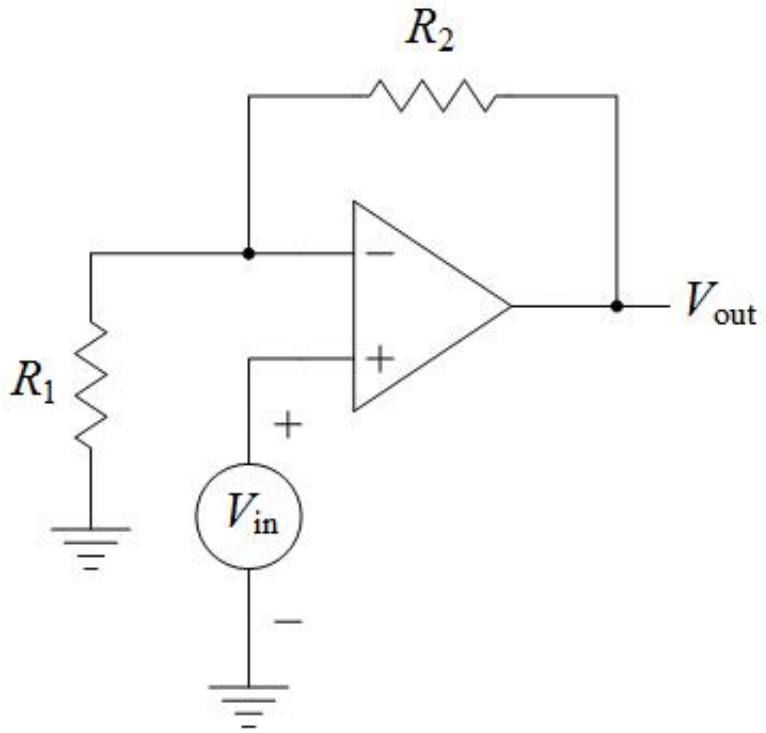
The correct answer is: 155.24

Started on	Thursday, 21 September 2017, 11:52 AM
State	Finished
Completed on	Thursday, 21 September 2017, 11:52 AM
Time taken	7 secs
Grade	**0.0** out of 10.0 (**0**%)

Question 1

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what value must R2 be in kilohms in order to set the voltage gain to 31.1 V/V ? Assume that the opamp is ideal, and use R1 = 1.1kΩ.

Answer:

The correct answer is: 33.11

Question 2

Not answered

Mark 0.0 out of 2.0

The output voltage of an ideal opamp never clips, no matter how big the output gets.

Select one:

- True
- False

The correct answer is 'True'.

Question 3

Not answered

Mark 0.0 out of 2.0

Which of the following is true for a difference amplifier?

Select one:

- a. They are designed to reject the average value of the voltage of the 2 input signals
- b. They are designed to amplify the average value of the voltage of the 2 input signals
- c. To achieve a low CMRR the resistors used must match each other well
- d. Increasing their voltage gain usually requires increasing their input resistance
- e. All of these

The correct answer is: They are designed to reject the average value of the voltage of the 2 input signals

Question 4

Not answered

Mark 0.0 out of 2.0

The gain of an integrated circuit opamp multiplied by it's bandwidth is constant anywhere on the amplifier's frequency response plot below the -3dB frequency and above the unity gain frequency.

Select one:

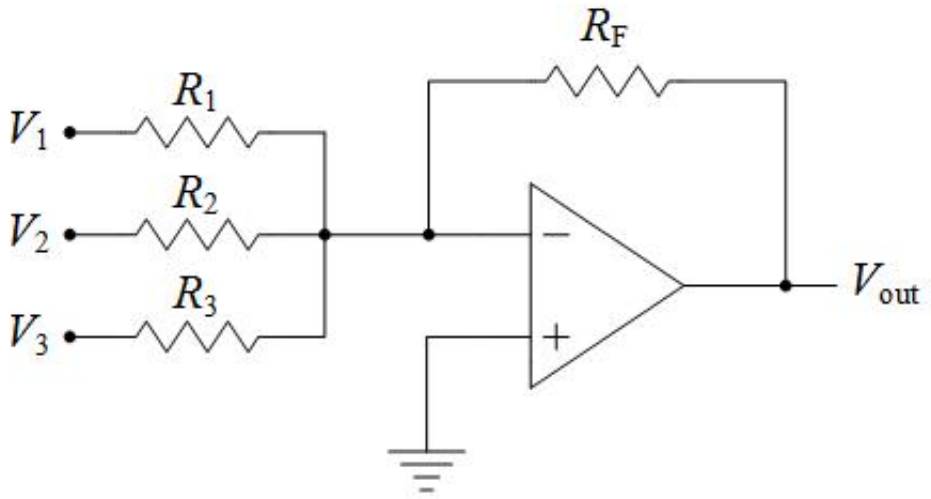
- True
- False

The correct answer is 'False'.

Question 5

Not answered

Mark 0.0 out of 2.0



What is the voltage gain in V/V from the V3 input to the output for the operational amplifier circuit shown? Assume that the opamp is ideal, and use R1 = 8.3kΩ, R2 = 8.4kΩ, R3 = 9.2kΩ and RF = 67.7kΩ.

Answer:

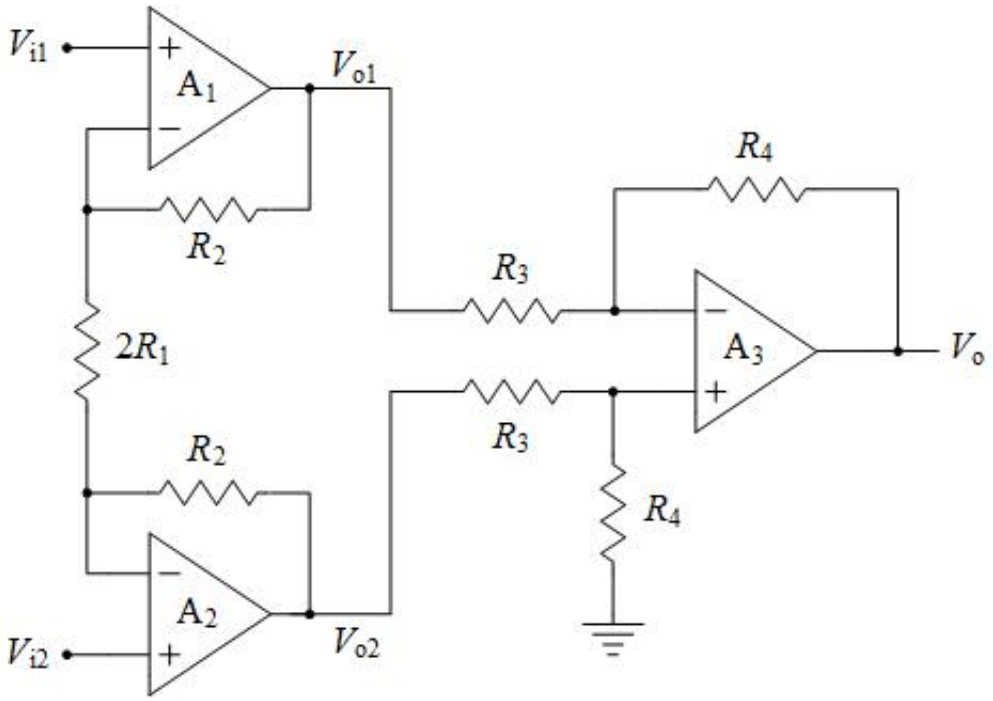
The correct answer is: -7.36

Started on	Thursday, 21 September 2017, 11:53 AM
State	Finished
Completed on	Thursday, 21 September 2017, 11:53 AM
Time taken	9 secs
Grade	**0.0** out of 10.0 (**0**%)

Question 1

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what is the voltage, Vo1, at the output of the first opamp A1 if Vi1 = 1.048V and Vi2 = 1.048V ? Assume that all the opamps are ideal, and use R1 = 4.9kΩ, R2 = 5.6kΩ, R3 = 9.9kΩ and R4 = 9.8kΩ.

Answer:

The correct answer is: 1.048

Question 2

Not answered

Mark 0.0 out of 2.0

The maximum frequency sine wave which an opamp can output at full amplitude without hitting the full-power bandwidth limit is called the Slew Rate.

Select one:

- True
- False

The correct answer is 'False'.

Question 3

Not answered

Mark 0.0 out of 2.0

Which of the following is NOT true for ideal opamps?

Select one:

- a. None of these
- b. They can output voltages above and below the power supply voltages
- c. They can amplify input frequencies up to infinity
- d. They can output an infinite amount of current
- e. They only amplify the average in voltage between the + and – inputs

The correct answer is: They only amplify the average in voltage between the + and – inputs

Question 4

Not answered

Mark 0.0 out of 2.0

The closed-loop gain of a unity gain buffer built using negative feedback around an integrated circuit opamp is always exactly equal to one.

Select one:

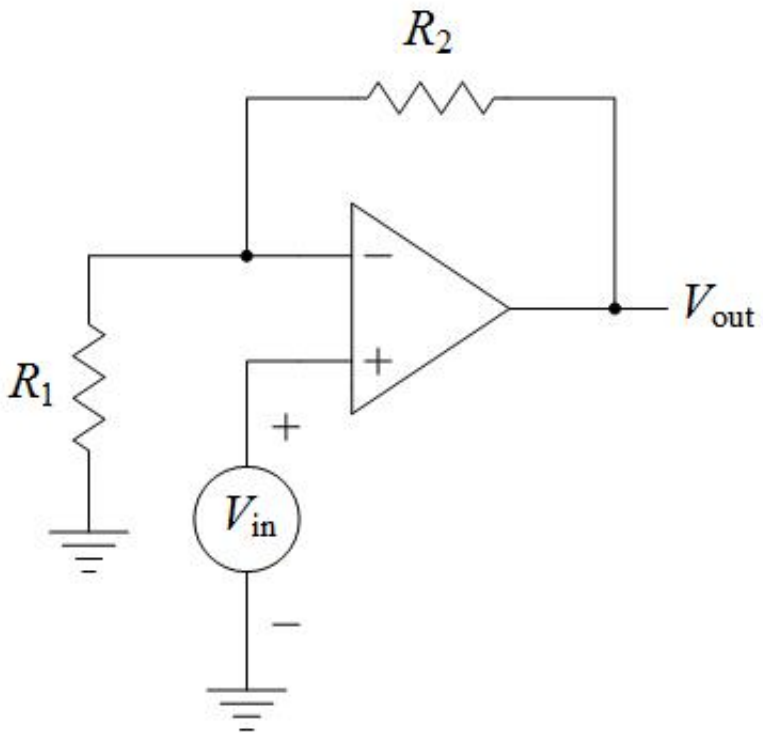
- True
- False

The correct answer is 'False'.

Question 5

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, if the maximum percentage error in the closed-loop voltage gain must be no larger than 2.3 percent, then what is the minimum required open-loop voltage gain for the opamp in V/V ? Assume that the opamp has a finite open-loop voltage gain, but is ideal in all other respects. Use R1 = 1.3kΩ and R2 = 19.0kΩ.

Answer:

The correct answer is: 663.3

Started on	Thursday, 21 September 2017, 11:54 AM
State	Finished
Completed on	Thursday, 21 September 2017, 11:54 AM
Time taken	8 secs
Grade	**0.0** out of 10.0 (**0**%)

Question 1

Not answered

Mark 0.0 out of 2.0

What is the frequency in kHz of the highest frequency full-swing sine wave that can be output by an operational amplifier with a slew-rate of 18.9 V/μsec and a maximum output voltage swing of ± 5.1 V ?

Answer:

The correct answer is: 589.81

Question 2

Not answered

Mark 0.0 out of 2.0

The closed-loop gain of a non-inverting amplifier built using resistors to provide negative feedback around an integrated circuit opamp is slightly less than one plus the ratio of the resistors used.

Select one:

- True
- False

The correct answer is 'True'.

Question 3

Not answered

Mark 0.0 out of 2.0

Which of the following is true for ideal opamps?

Select one:

- a. They can output voltages above and below the power supply voltages
- b. They can only amplify input frequencies up to about 1 Ghz
- c. They can only output currents up to about 100mA
- d. They only amplify the average in voltage between the + and – inputs
- e. All of these

The correct answer is: They can output voltages above and below the power supply voltages

Question 4

Not answered

Mark 0.0 out of 2.0

Operational amplifiers use positive feedback to achieve more accurate gain values.

Select one:

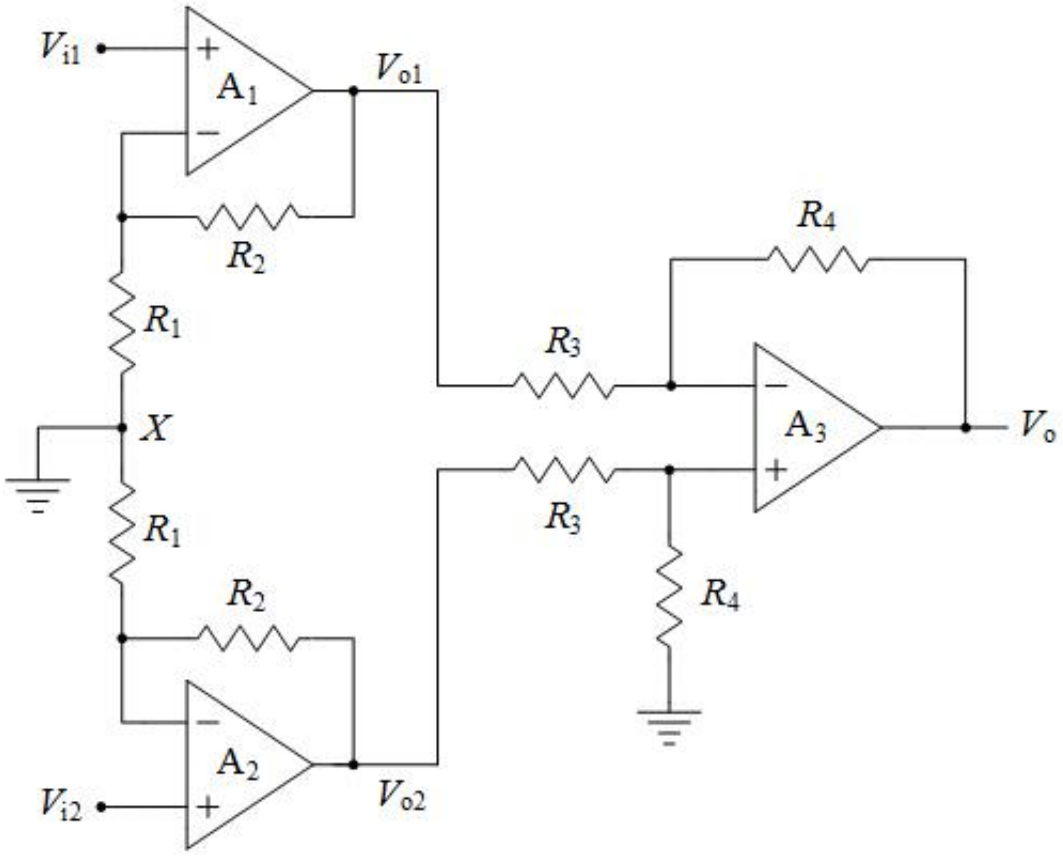
- True
- False

The correct answer is 'False'.

Question 5

Not answered

Mark 0.0 out of 2.0



If the operational amplifier circuit shown is changed by removing the wire from node X to ground, then what will the voltage, Vo1, be at the output of the first opamp A1 if Vi1 = 1.042V and Vi2 = 1.012V ? Assume that all the opamps are ideal, and use R1 = 1.2kΩ, R2 = 9.4kΩ, R3 = 2.2kΩ and R4 = 1.4kΩ.

Answer:

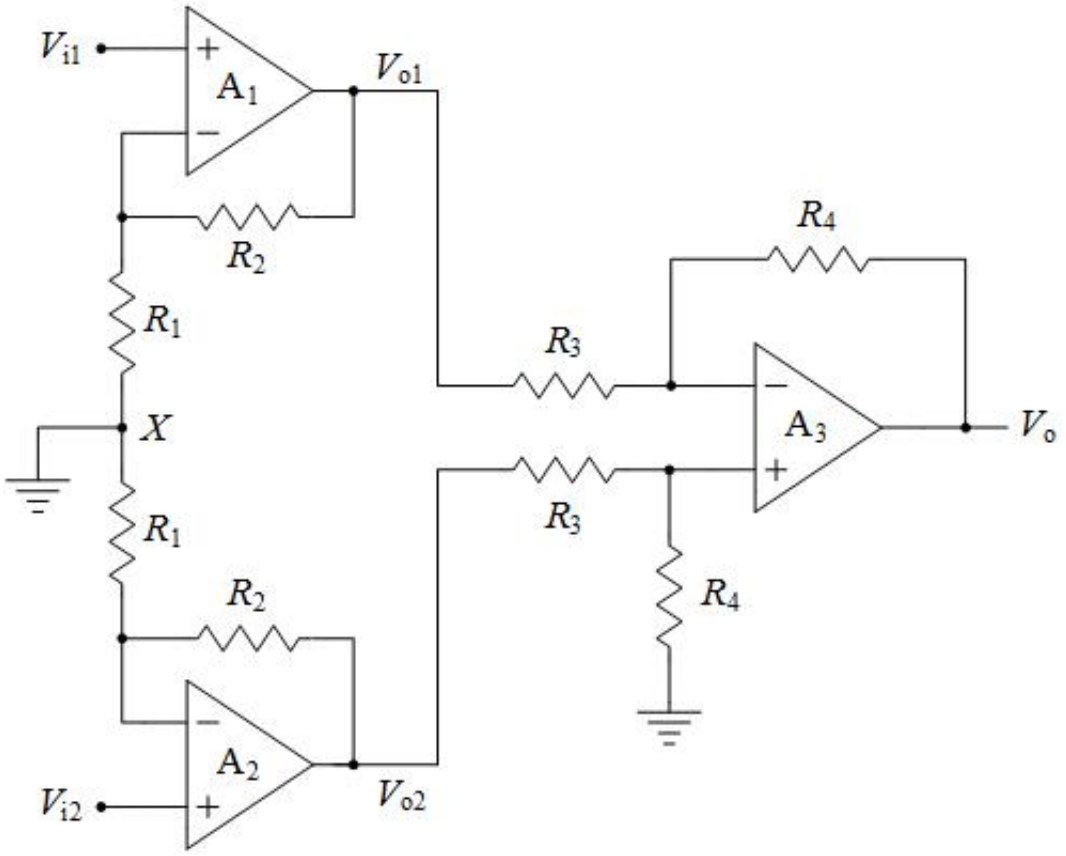
The correct answer is: 1.160

Started on	Thursday, 21 September 2017, 11:55 AM
State	Finished
Completed on	Thursday, 21 September 2017, 11:55 AM
Time taken	7 secs
Grade	**0.0** out of 10.0 (**0**%)

Question 1

Not answered

Mark 0.0 out of 2.0



If the operational amplifier circuit shown is changed by removing the wire from node X to ground, then what will the common-mode voltage gain be in V/V from the common-mode input voltage, Vicm = (Vi2+Vi1)/2, to the common-mode output voltage of the first stage, Vocm1 = (Vo2+Vo1)/2 ? Assume that all the opamps are ideal, and use R1 = 7.9kΩ, R2 = 46.5kΩ, R3 = 4.8kΩ and R4 = 96.8kΩ.

Answer:

The correct answer is: 1.00

Question 2

Not answered

Mark 0.0 out of 2.0

On the DC transfer curve of an opamp, the differential input voltage which causes the output voltage to equal zero volts is referred to as the input offset voltage.

Select one:

- True
- False

The correct answer is 'True'.

Question 3

Not answered

Mark 0.0 out of 2.0

Errors in the output voltage of an actual integrated circuit operational amplifier can be caused by :

Select one:

- a. High slew rate for signals which change quickly
- b. None of these
- c. High open-loop voltage gain
- d. Zero offset voltages and currents
- e. Low bandwidth for high frequency signals

The correct answer is: Low bandwidth for high frequency signals

Question 4

Not answered

Mark 0.0 out of 2.0

Ideal opamp differentiators without an extra resistor in series with the capacitor have infinite gain at infinite frequency.

Select one:

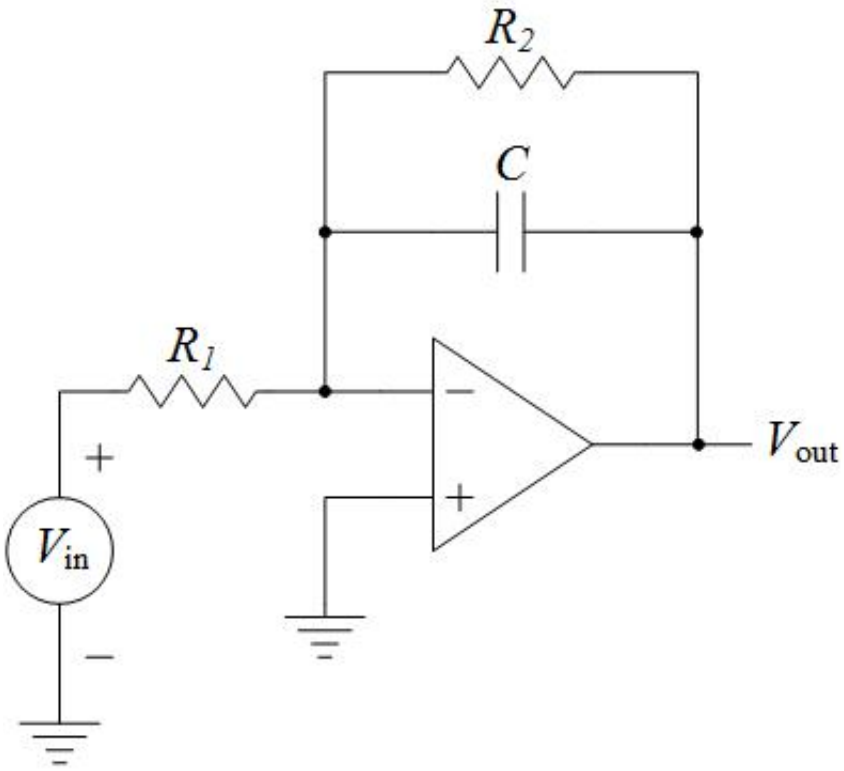
- True
- False

The correct answer is 'True'.

Question 5

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what is the magnitude of the voltage gain in dB at a frequency of 8.1MHz? Assume that the opamp is ideal, and use R1 = 4.0kΩ, R2 = 44.7kΩ and C = 3.7pF.

Answer:

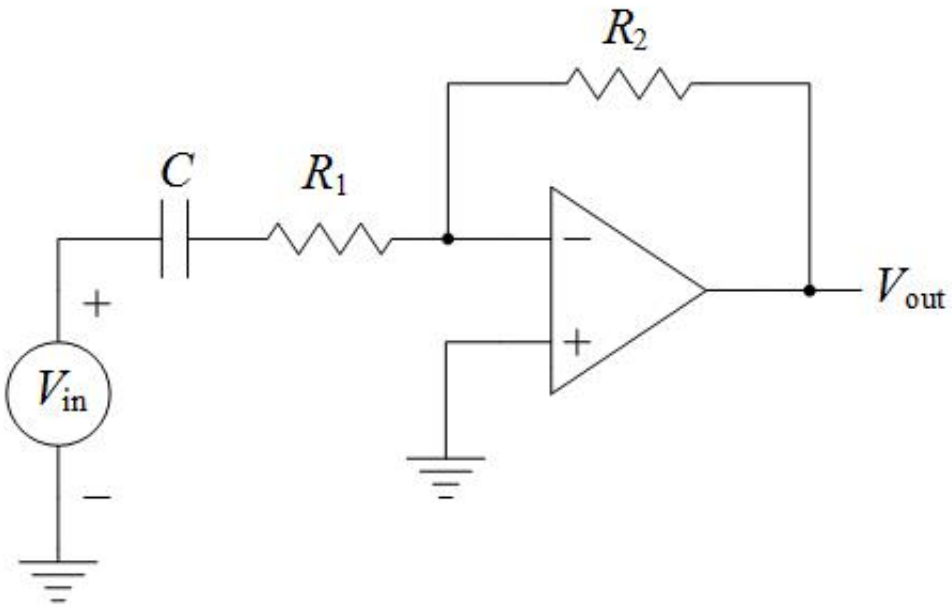
The correct answer is: 2.40

Started on	Thursday, 21 September 2017, 11:55 AM
State	Finished
Completed on	Thursday, 21 September 2017, 11:55 AM
Time taken	9 secs
Grade	**0.0** out of 10.0 (**0**%)

Question 1

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what is the magnitude of the voltage gain in dB at a frequency of 2.8MHz? Assume that the opamp is ideal, and use R1 = 4.1kΩ, R2 = 16.5kΩ and C = 1.5pF.

Answer:

The correct answer is: -7.27

Question 2

Not answered

Mark 0.0 out of 2.0

An ideal opamp has infinite differential-mode voltage gain.

Select one:

- True
- False

The correct answer is 'True'.

Question 3

Not answered

Mark 0.0 out of 2.0

Non-ideal effects in real integrated circuit operational amplifiers can cause :

Select one:

- a. The input currents into the + and – inputs to be zero
- b. The difference in voltage between the + and – inputs to be greater than zero
- c. None of these
- d. The output voltage to be equal to zero when the voltage between the + and – inputs is zero
- e. The difference in voltage between the + and – inputs to decrease as the signal frequency increases

The correct answer is: The difference in voltage between the + and – inputs to be greater than zero

Question 4

Not answered

Mark 0.0 out of 2.0

An ideal opamp has zero input resistance.

Select one:

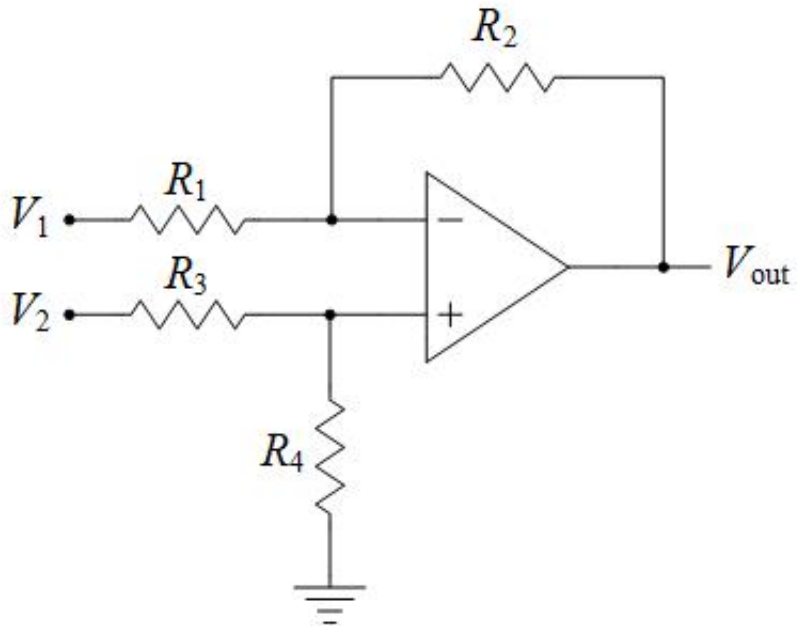
- True
- False

The correct answer is 'False'.

Question 5

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what is the output voltage if V1 = 0.630V and V2 = 0.161V ? Assume that the opamp is ideal, and use R1 = R3 = 7.0kΩ and R2 = R4 = 18.0kΩ.

Answer:

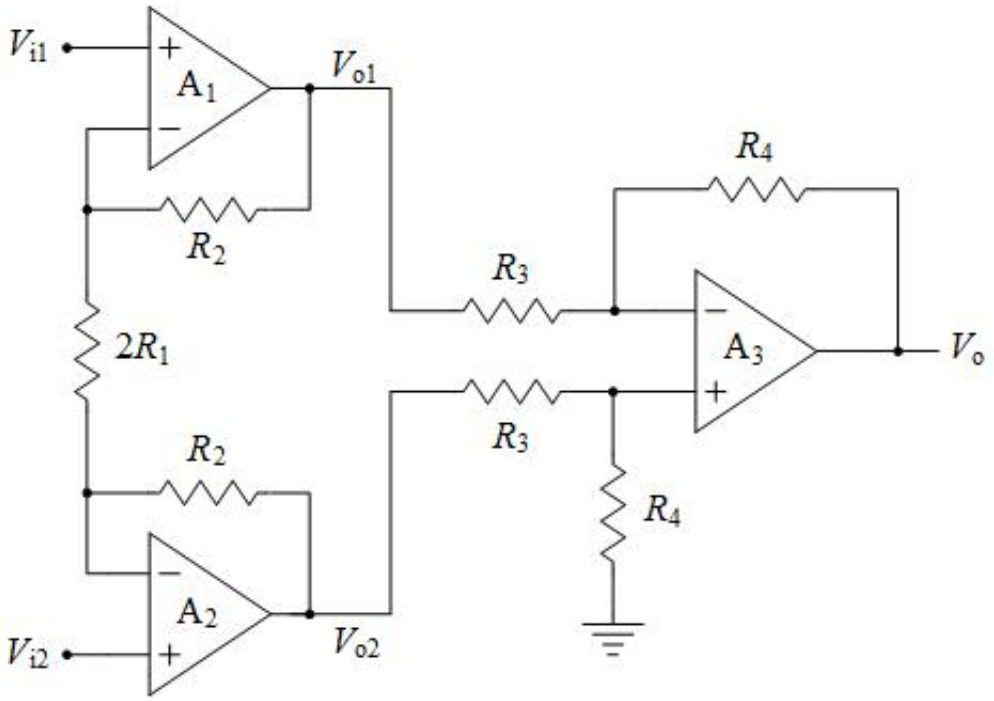
The correct answer is: -1.206

Started on	Thursday, 21 September 2017, 11:57 AM
State	Finished
Completed on	Thursday, 21 September 2017, 11:57 AM
Time taken	8 secs
Grade	**0.0** out of 10.0 (**0**%)

Question 1

Not answered

Mark 0.0 out of 2.0



What is the differential-mode voltage gain, Adm, in dB from the differential input voltage, Vidm = Vi2-Vi1, to the output for the operational amplifier circuit shown? Assume that all the opamps are ideal, and use R1 = 3.0kΩ, R2 = 83.9kΩ, R3 = 3.7kΩ and R4 = 95.5kΩ.

Answer:

The correct answer is: 57.47

Question 2

Not answered

Mark 0.0 out of 2.0

Ideal opamp integrators without an extra resistor in parallel with the capacitor have infinite gain at DC.

Select one:

- True
- False

The correct answer is 'True'.

Question 3

Not answered

Mark 0.0 out of 2.0

Which of the following is true for actual integrated circuit opamps?

Select one:

- a. They trade away extra closed-loop gain to achieve more accurate open-loop gain values
- b. Their open-loop gain decreases as frequency decreases
- c. They depend on accurate resistor values to set accurate closed-loop gain values
- d. They are almost always used to build amplifiers employing negative feedback
- e. All of these

The correct answer is: They are almost always used to build amplifiers employing negative feedback

Question 4

Not answered

Mark 0.0 out of 2.0

The closed-loop gain of a non-inverting amplifier built using resistors to provide negative feedback around an opamp is equal to the ratio of the resistors used.

Select one:

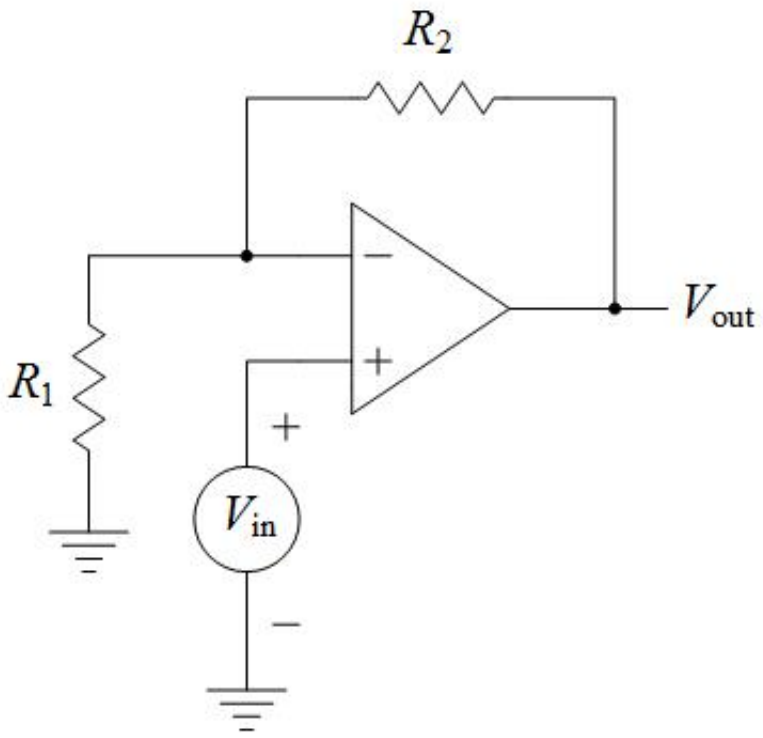
- True
- False

The correct answer is 'False'.

Question 5

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what is the output voltage in Volts if Vin = 0.2V? Assume that the opamp has an input offset voltage of 7.9mV, and is ideal in all other respects. Use R1 = 9.7kΩ and R2 = 20.5kΩ. Since offset voltages are small, be sure to give your answer to the nearest millivolt!

Answer:

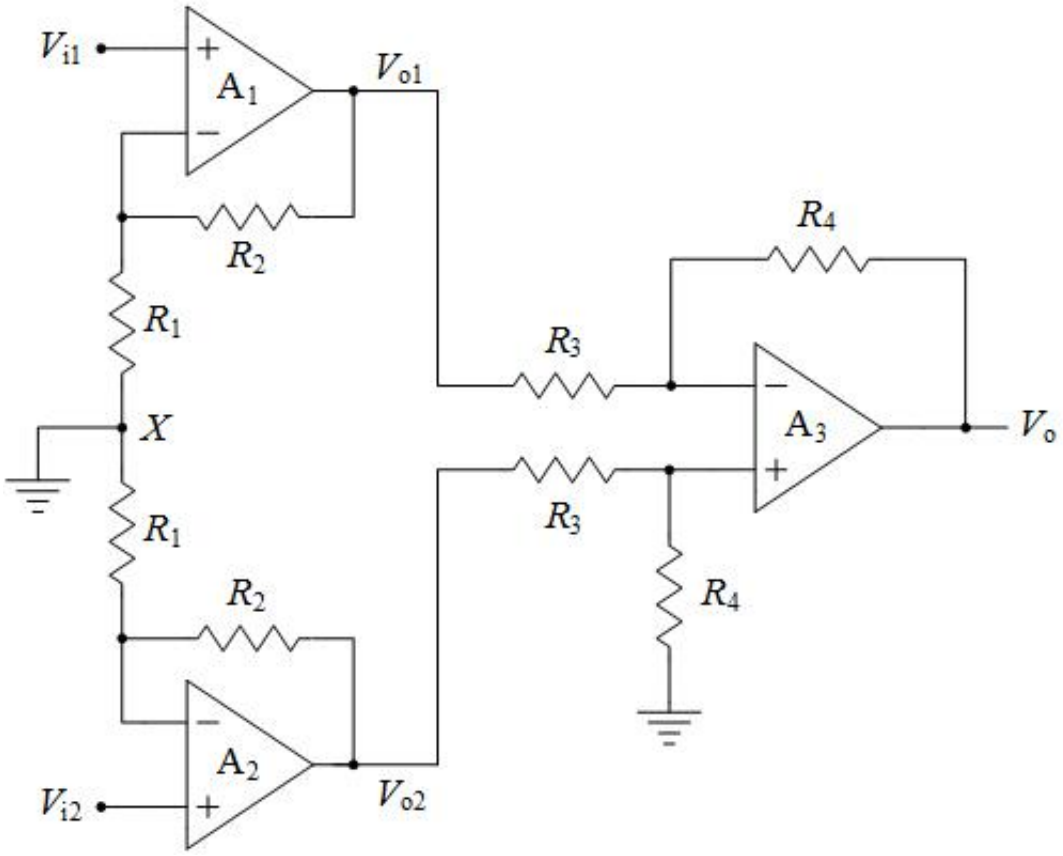
The correct answer is: 0.598

Started on	Thursday, 21 September 2017, 12:06 PM
State	Finished
Completed on	Thursday, 21 September 2017, 12:38 PM
Time taken	32 mins 26 secs
Grade	**6.0** out of 10.0 (**60**%)

Question 1

Correct

Mark 2.0 out of 2.0



If the operational amplifier circuit shown is changed by removing the wire from node X to ground, then what will the voltage, Vo1, be at the output of the first opamp A1 if Vi1 = 1.031V and Vi2 = 1.061V ? Assume that all the opamps are ideal, and use R1 = 2.0kΩ, R2 = 1.8kΩ, R3 = 4.3kΩ and R4 = 2.9kΩ.

Answer: 1.0175

The correct answer is: 1.017

Correct

Marks for this submission: 2.0/2.0.

Question 2

Correct

Mark 2.0 out of 2.0

It is usually easy to minimize errors due to the input bias current of an opamp by adding a resistor in the + input terminal equal to the parallel combination of the resistors connected to the - input terminal.

Select one:

- True ✓
- False

The correct answer is 'True'.

Correct

Marks for this submission: 2.0/2.0.

Question 3

Correct

Mark 2.0 out of 2.0

Which of the following is true for actual integrated circuit opamps?

Select one:

- a. They trade away extra closed-loop gain to achieve more accurate open-loop gain values
- b. All of these
- c. They are almost always used to build amplifiers employing positive feedback
- d. They depend on accurate resistor values to set accurate closed-loop gain values
- e. Their open-loop gain decreases as frequency increases ✓

The correct answer is: Their open-loop gain decreases as frequency increases

Correct

Marks for this submission: 2.0/2.0.

Question 4

Correct

Mark 0.0 out of 2.0

Actual integrated circuit opamps typically have a low voltage gain at low frequencies, which increases to higher values as frequency increases.

Select one:

- True
- False ✓

The correct answer is 'False'.

Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **0.0/2.0**.

Question 5

Incorrect

Mark 0.0 out of 2.0

If the output voltage for an operational amplifier can only swing up to 1.0V below the positive power supply voltage, and down to 2.4V above the negative power supply voltage, then what is the maximum peak-to-peak sine wave in Volts that this opamp can output without clipping? Use VCC = +15V and VEE = -0V.

Answer: 13.6 ✗

The correct answer is: 11.60

Incorrect

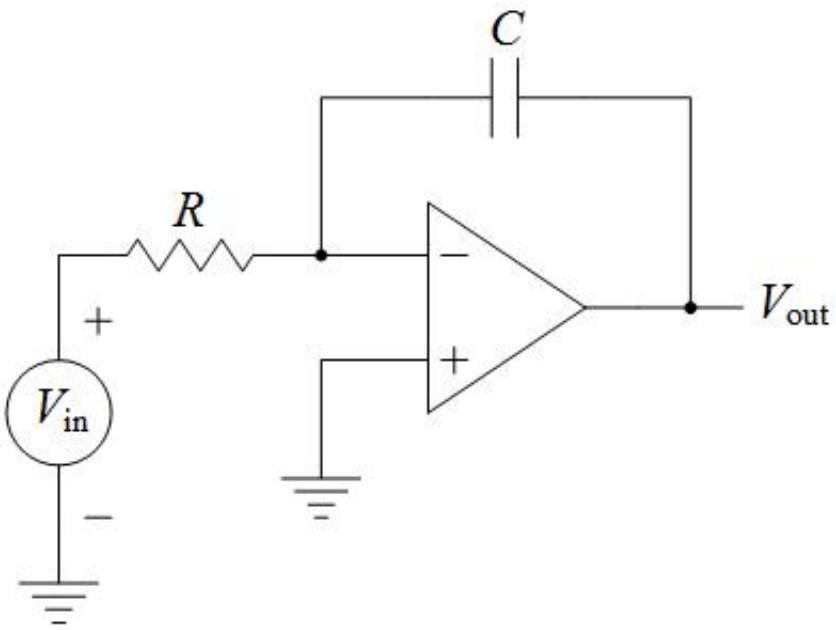
Marks for this submission: 0.0/2.0.

Started on	Thursday, 21 September 2017, 11:59 AM
State	Finished
Completed on	Thursday, 21 September 2017, 11:59 AM
Time taken	19 secs
Grade	**0.0** out of 10.0 (**0**%)

Question 1

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what is the magnitude of the voltage gain in dB at a frequency of 1.4MHz? Assume that the opamp is ideal, and use R = 5.5kΩ and C = 2.7pF.

Answer:

The correct answer is: 17.68

Question 2

Not answered

Mark 0.0 out of 2.0

An ideal opamp has zero common-mode voltage gain.

Select one:

- True
- False

The correct answer is 'True'.

Question 3

Not answered

Mark 0.0 out of 2.0

Which of the following is one of the ideal opamp assumptions?

Select one:

- a. Ideal opamps have zero gain for common-mode input signals
- b. Ideal opamps have zero output resistance
- c. Ideal opamps have infinite input resistance
- d. All of these
- e. Ideal opamps have infinite gain for differential-mode input signals

The correct answer is: All of these

Question 4

Not answered

Mark 0.0 out of 2.0

Differentiators built with opamps use a capacitor between the negative opamp input and the output.

Select one:

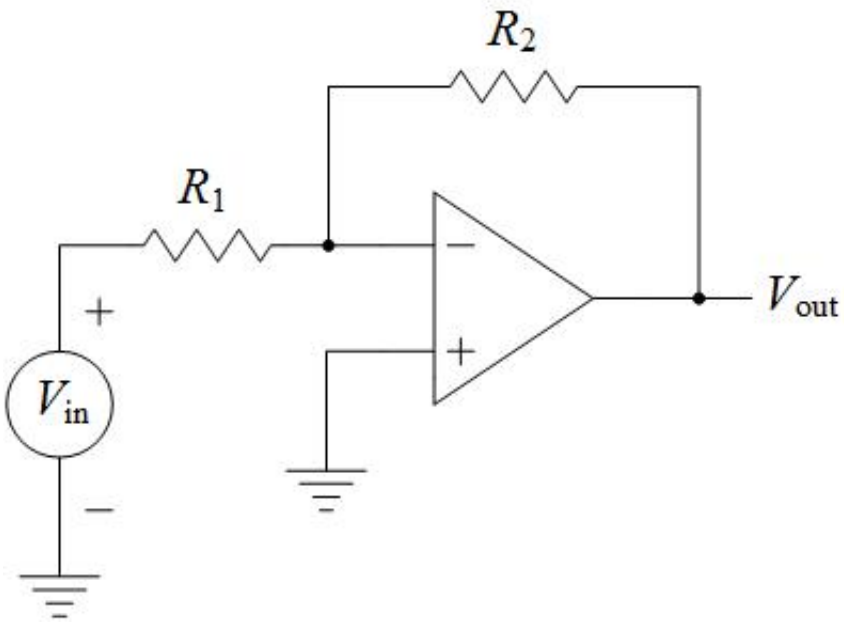
- True
- False

The correct answer is 'False'.

Question 5

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, if the maximum percentage error in the closed-loop voltage gain must be no larger than 3.6 percent, then what is the minimum required open-loop voltage gain for the opamp in V/V ? Assume that the opamp has a finite open-loop voltage gain, but is ideal in all other respects. Use R1 = 4.8kΩ and R2 = 47.1kΩ.

Answer:

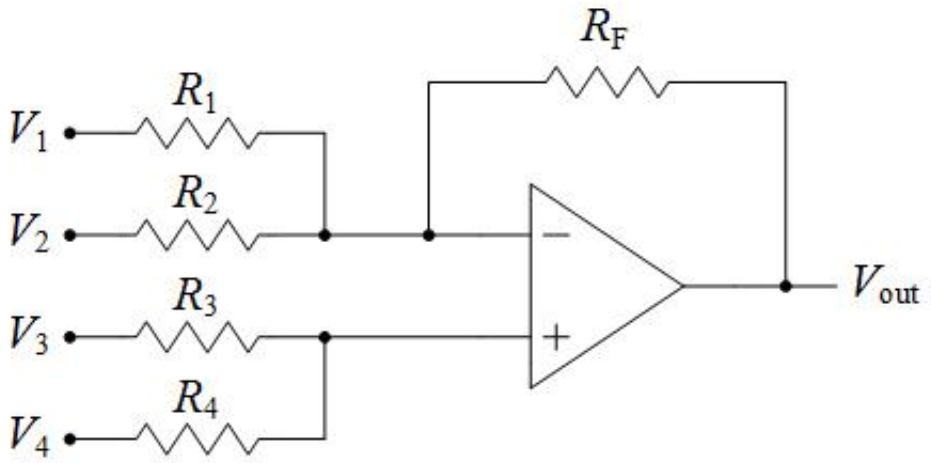
The correct answer is: 289.5

Started on	Thursday, 21 September 2017, 12:01 PM
State	Finished
Completed on	Thursday, 21 September 2017, 12:01 PM
Time taken	11 secs
Grade	**0.0** out of 10.0 (**0**%)

Question 1

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what is the output voltage if V1 = 0.256V, V2 = 0.466V, V3 = 0.516V and V4 = 2.714V ? Assume that the opamp is ideal, and use R1 = 8.1kΩ, R2 = 8.3kΩ, R3 = 6.8kΩ, R4 = 8.7kΩ and RF = 2.5kΩ.

Answer:

The correct answer is: 2.164

Question 2

Not answered

Mark 0.0 out of 2.0

Since the open-loop gain of an opamp decreases at high frequencies, there will be more errors in the output voltage at low frequencies than at high frequencies.

Select one:

- True
- False

The correct answer is 'False'.

Question 3

Not answered

Mark 0.0 out of 2.0

Instrumentation amplifiers are often used instead of simple difference amplifiers to :

Select one:

- a. Increase the amplifier’s output resistance
- b. Reduce the amplifier’s common-mode gain
- c. Reduce the amplifier’s input resistance
- d. None of these
- e. Reduce the amount of power used by the amplifier

The correct answer is: Reduce the amplifier’s common-mode gain

Question 4

Not answered

Mark 0.0 out of 2.0

The CMRR for an opamp typically depends on how well the devices inside the opamp match to each other.

Select one:

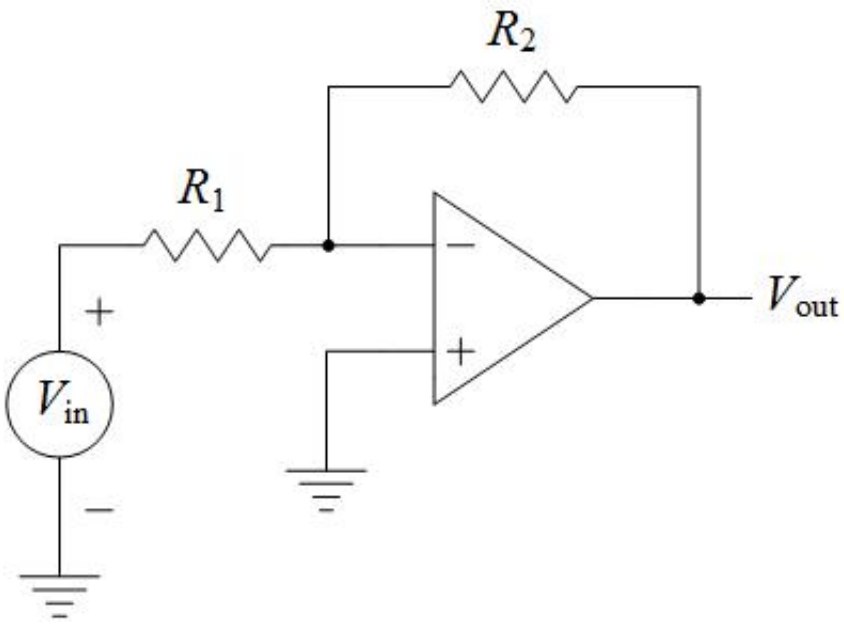
- True
- False

The correct answer is 'True'.

Question 5

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what value must R1 be in kilohms in order to set the voltage gain to -36.4 V/V ? Assume that the opamp is ideal, and use R2 = 16.9kΩ.

Answer:

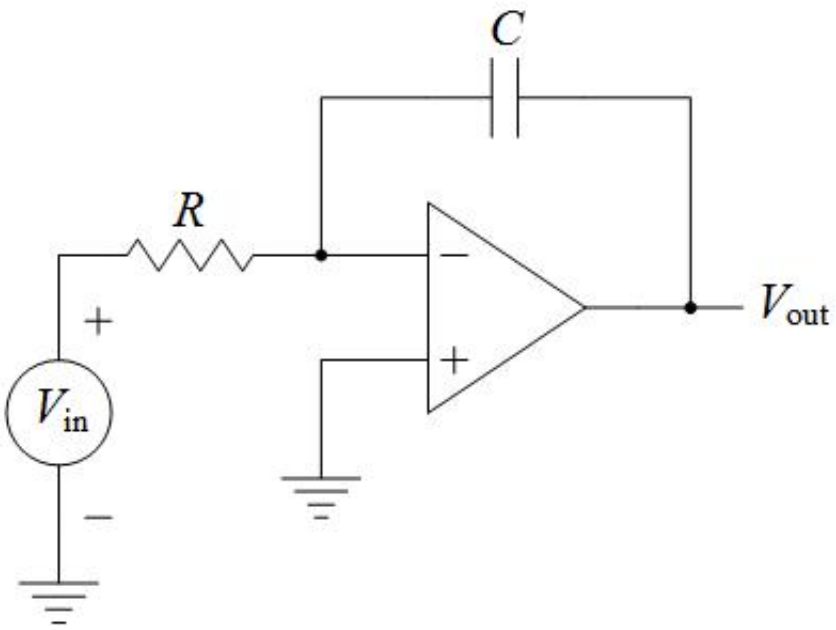
The correct answer is: 0.46

Started on	Thursday, 21 September 2017, 12:39 PM
State	Finished
Completed on	Thursday, 21 September 2017, 12:41 PM
Time taken	1 min 40 secs
Grade	**3.0** out of 10.0 (**30**%)

Question 1

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what is the magnitude of the voltage gain in dB at a frequency of 3.9MHz? Assume that the opamp is ideal, and use R = 3.5kΩ and C = 4.5pF.

Answer:

The correct answer is: 8.27

Question 2

Correct

Mark 0.0 out of 2.0

The negative input terminal of an opamp connected in an inverting amplifier configuration is referred to as a “virtual ground” because negative feedback forces the signal voltage on this node to be very close to zero.

Select one:

- True ✓
- False

The correct answer is 'True'.

Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **0.0/2.0**.

Question 3

Correct

Mark 1.0 out of 2.0

Which of the following is true for an inverting summing amplifier built using a single opamp?

Select one:

- a. The gain for each input will go up as the input resistance for that input goes up
- b. The gain for each input depends only on the value of the resistor connected to that input
- c. The gain for each input varies as the resistors connected to the other inputs change
- d. All of these
- e. The gain for all inputs can be varied by changing the resistor connected in feedback ✓

The correct answer is: The gain for all inputs can be varied by changing the resistor connected in feedback

Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **1.0/2.0**.

Question 4

Correct

Mark 2.0 out of 2.0

For Difference amplifiers there is a tradeoff between voltage gain and input resistance, which makes it hard to get a high gain without also getting a low input resistance.

Select one:

- (•) True ✓
- ( ) False

The correct answer is 'True'.

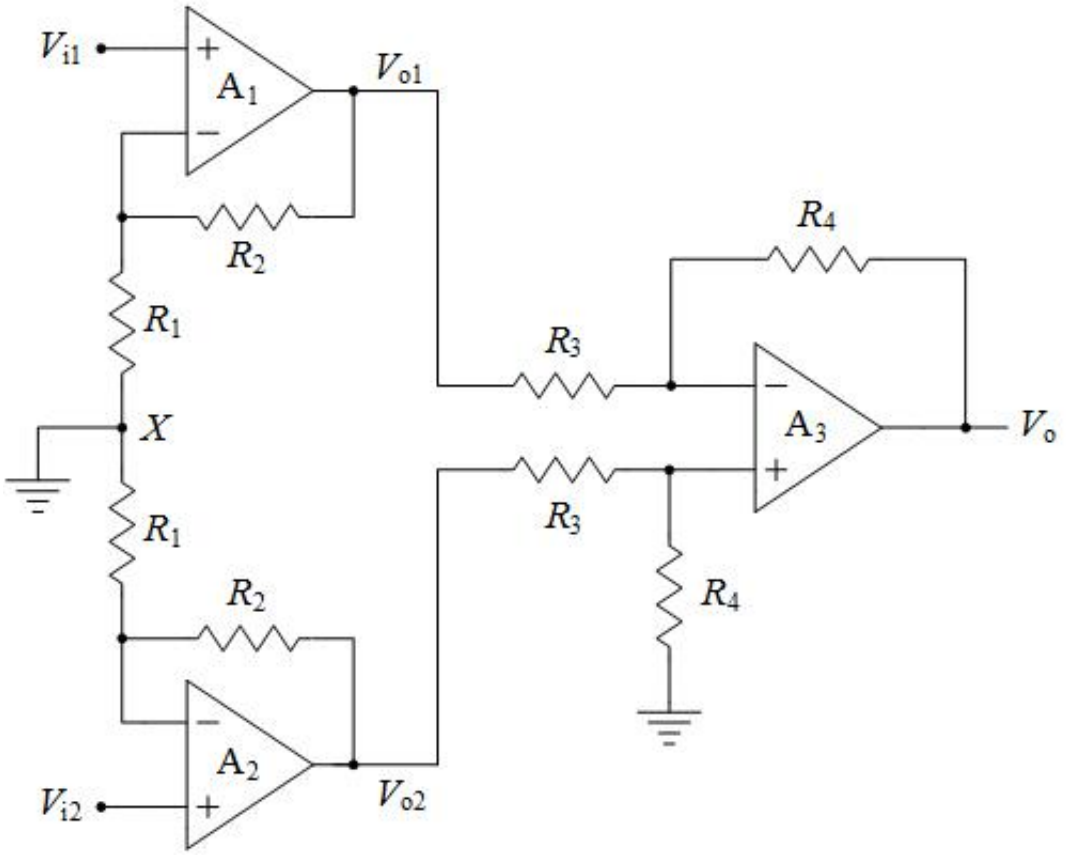
Correct

Marks for this submission: 2.0/2.0.

Question 5

Not answered

Mark 0.0 out of 2.0



If the operational amplifier circuit shown is changed by removing the wire from node X to ground, then what will the common-mode voltage gain be in V/V from the common-mode input voltage, Vicm = (Vi2+Vi1)/2, to the common-mode output voltage of the first stage, Vocm1 = (Vo2+Vo1)/2 ? Assume that all the opamps are ideal, and use R1 = 4.7kΩ, R2 = 57.8kΩ, R3 = 2.5kΩ and R4 = 46.9kΩ.

Answer:

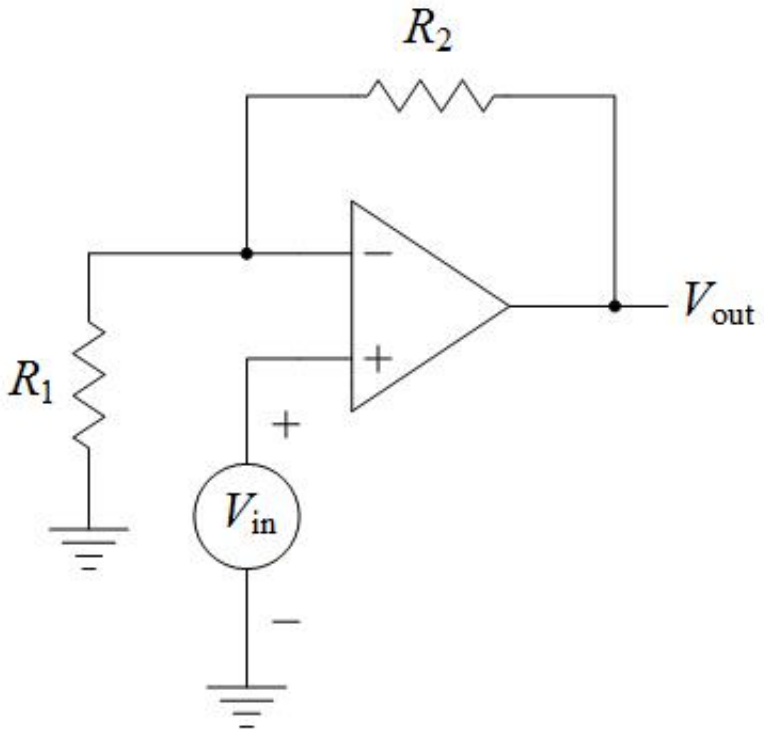
The correct answer is: 1.00

Started on	Thursday, 21 September 2017, 12:41 PM
State	Finished
Completed on	Thursday, 21 September 2017, 12:42 PM
Time taken	1 min 14 secs
Grade	**2.0** out of 10.0 (**20**%)

Question 1

Not answered

Mark 0.0 out of 2.0



What is the output resistance in kilohms for the operational amplifier circuit shown? Assume that the opamp is ideal, and use R1 = 2.0kΩ and R2 = 37.5kΩ.

Answer:

The correct answer is: 0.0

Question 2

Correct

Mark 0.0 out of 2.0

The differential-mode input voltage for an opamp is the average of the + and – input voltages.

Select one:

- True
- False ✓

The correct answer is 'False'.

Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **0.0/2.0**.

Question 3

Correct

Mark 0.0 out of 2.0

Which of the following is true for ideal opamps?

Select one:

- a. They only amplify the difference in voltage between the + and – inputs
- b. All of these ✓
- c. They can output an infinite amount of current
- d. They can amplify input frequencies up to infinity
- e. They can output voltages above and below the power supply voltages

The correct answer is: All of these

Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **0.0/2.0**.

Question 4

Correct

Mark 2.0 out of 2.0

The negative input terminal of an opamp connected in a non-inverting amplifier configuration is at almost zero volts because of negative feedback.

Select one:

- True
- False ✓

The correct answer is 'False'.

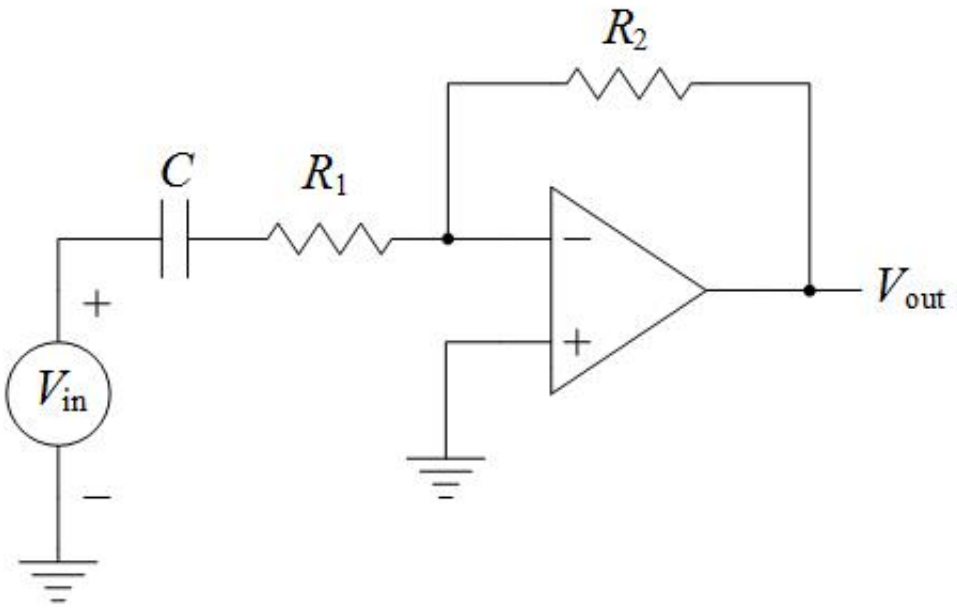
Correct

Marks for this submission: 2.0/2.0.

Question 5

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what is the magnitude of the voltage gain in dB at a frequency of 13.8MHz? Assume that the opamp is ideal, and use R1 = 1.1kΩ, R2 = 25.5kΩ and C = 3.8pF.

Answer: ✗

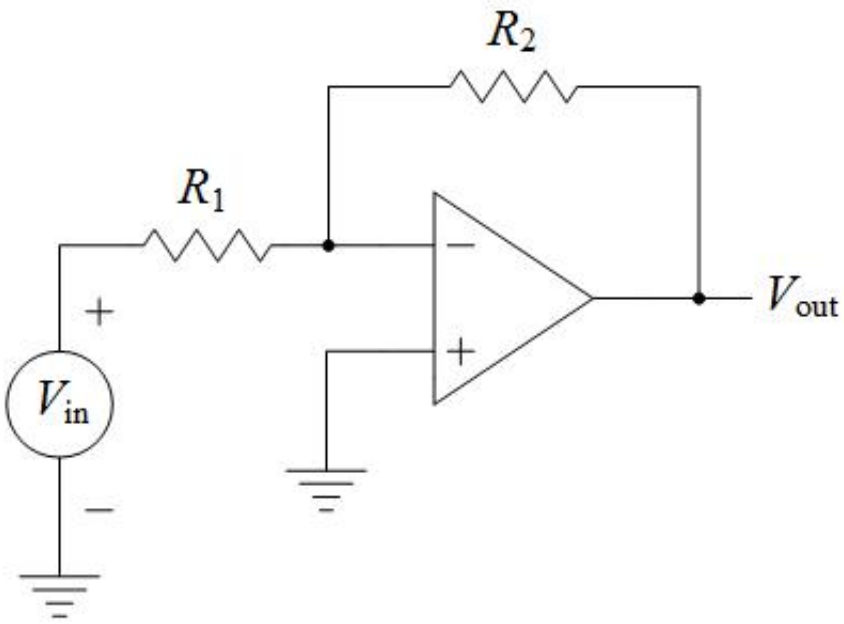
The correct answer is: 17.95

Started on	Thursday, 21 September 2017, 12:43 PM
State	Finished
Completed on	Thursday, 21 September 2017, 12:45 PM
Time taken	1 min 48 secs
Grade	**3.0** out of 10.0 (**30**%)

Question 1

Not answered

Mark 0.0 out of 2.0



What is the voltage gain in V/V for the operational amplifier circuit shown? Assume that the opamp is ideal, and use R1 = 2.6kΩ and R2 = 47.5kΩ.

Answer:

The correct answer is: -18.27

Question 2

Correct

Mark 0.0 out of 2.0

The output voltage of an integrated circuit opamp will clip if the load resistance gets too small.

Select one:

- True ✓
- False

The correct answer is 'True'.

Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **0.0/2.0**.

Question 3

Correct

Mark 1.0 out of 2.0

Errors in the output voltage of an actual integrated circuit operational amplifier can NOT be caused by :

Select one:

- a. Low open-loop voltage gain
- b. Low bandwidth for high frequency signals
- c. None of these
- d. Low slew rate for signals which change quickly
- e. Zero offset voltages or currents ✓

The correct answer is: Zero offset voltages or currents

Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **1.0/2.0**.

Question 4

Correct

Mark 2.0 out of 2.0

An ideal opamp has zero output resistance.

Select one:

- (•) True ✓
- ( ) False

The correct answer is 'True'.

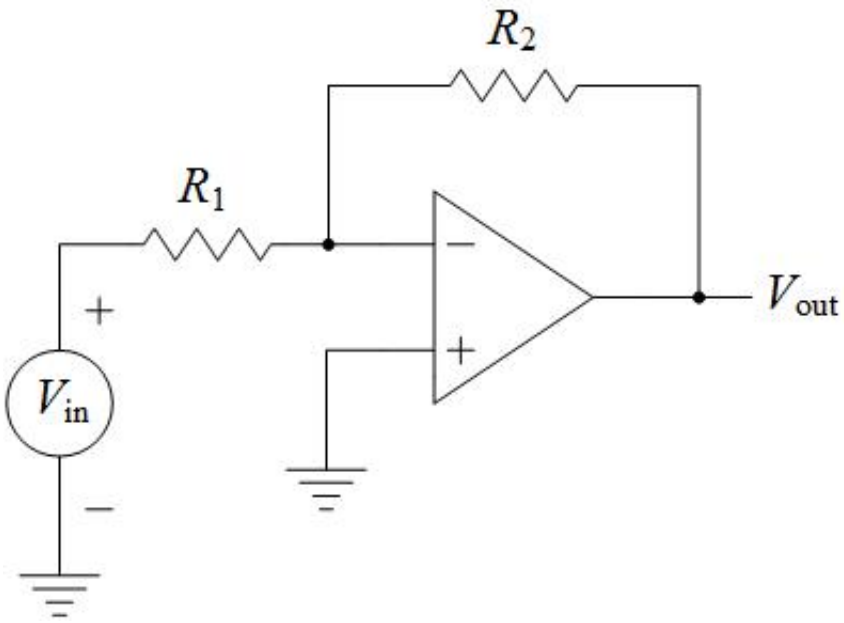
Correct

Marks for this submission: 2.0/2.0.

Question 5

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what is the output voltage in Volts if Vin = 0.1V? Assume that the opamp has an input offset voltage of 8.5mV, and is ideal in all other respects. Use R1 = 2.9kΩ and R2 = 24.4kΩ. Since offset voltages are small, be sure to give your answer to the nearest millivolt!

Answer: ✗

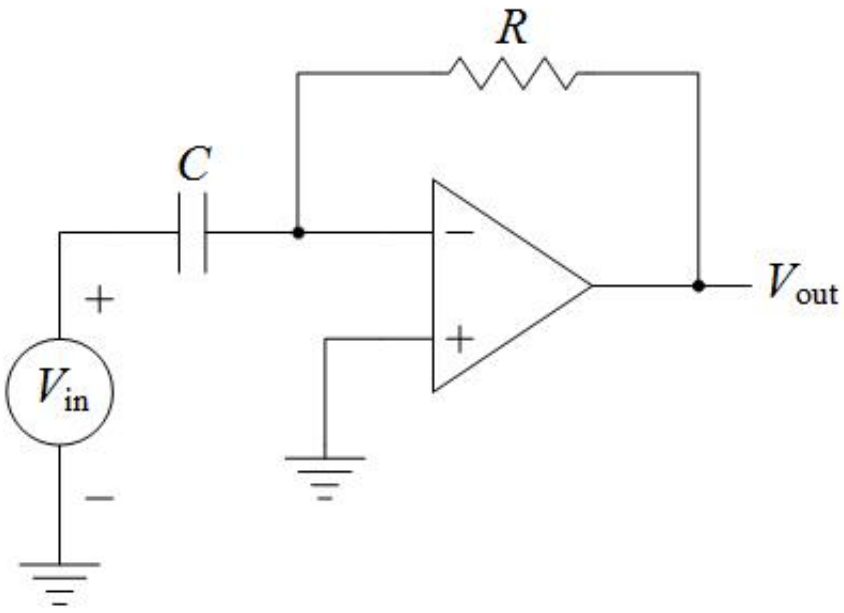
The correct answer is: -0.921

Started on	Thursday, 21 September 2017, 12:45 PM
State	Finished
Completed on	Thursday, 21 September 2017, 12:54 PM
Time taken	9 mins 2 secs
Grade	**6.0** out of 10.0 (**60**%)

Question 1

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what is the magnitude of the voltage gain in dB at a frequency of 38.0MHz? Assume that the opamp is ideal, and use R = 4.7kΩ and C = 9.9pF.

Answer:

The correct answer is: 20.91

Question 2

Correct

Mark 2.0 out of 2.0

An ideal opamp has zero differential-mode voltage gain.

Select one:

- True
- False ✓

The correct answer is 'False'.

Correct

Marks for this submission: 2.0/2.0.

Question 3

Correct

Mark 2.0 out of 2.0

Which of the following is true for an opamp connected as an active filter?

Select one:

- a. None of these
- b. The ideal opamp assumptions will still be valid as long as the loop gain is high enough ✓
- c. Replacing the input resistor in an inverting amp with a capacitor will increase the low frequency gain
- d. Replacing both the input and feedback resistors in an inverting amp with capacitors will increase both the low and high frequency gains
- e. Replacing the feedback resistor in an inverting amp with a capacitor will increase the high frequency gain

The correct answer is: The ideal opamp assumptions will still be valid as long as the loop gain is high enough

Correct

Marks for this submission: 2.0/2.0.

Question 4

Correct

Mark 2.0 out of 2.0

The input offset voltage of an integrated circuit opamp causes an inversion in the DC transfer curve of the opamp.

Select one:

- True
- False ✓

The correct answer is 'False'.

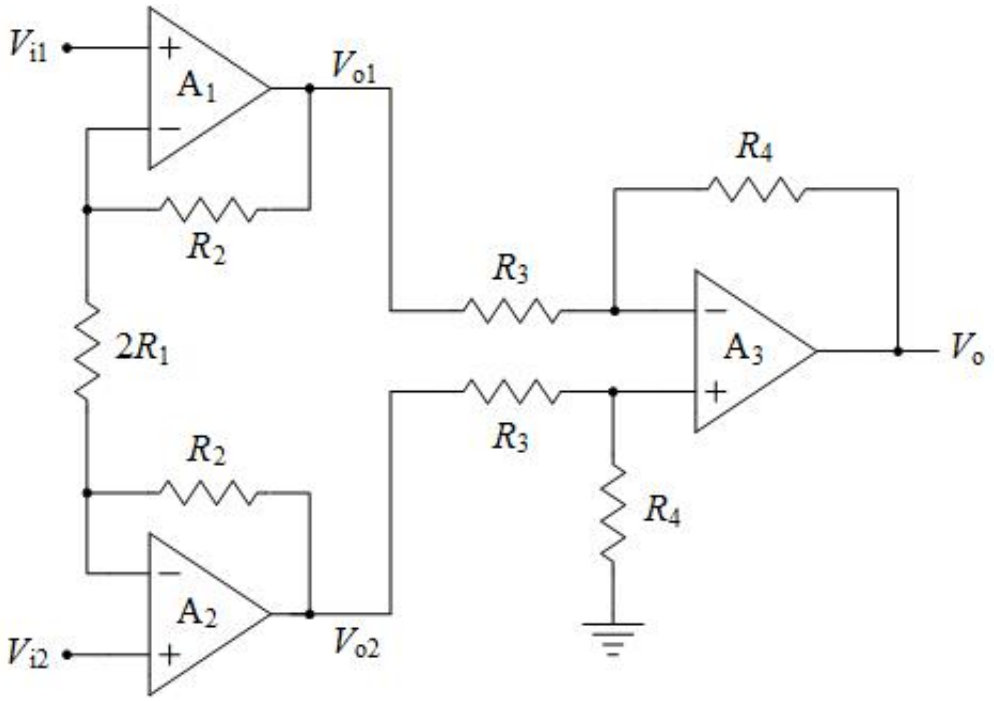
Correct

Marks for this submission: 2.0/2.0.

Question 5

Incorrect

Mark 0.0 out of 2.0



What is the differential-mode voltage gain, Adm, in V/V from the differential input voltage, Vidm = Vi2-Vi1, to the output for the operational amplifier circuit shown? Assume that all the opamps are ideal, and use R1 = 4.7kΩ, R2 = 82.0kΩ, R3 = 2.2kΩ and R4 = 59.1kΩ.

Answer: 53.9 ✗

The correct answer is: 495.55

Incorrect

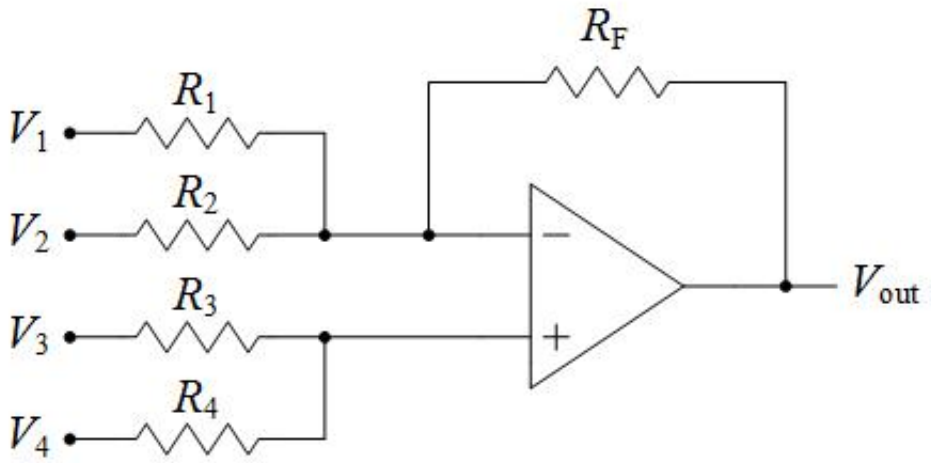
Marks for this submission: 0.0/2.0.

Started on	Thursday, 21 September 2017, 12:56 PM
State	Finished
Completed on	Thursday, 21 September 2017, 12:59 PM
Time taken	2 mins 49 secs
Grade	**1.0** out of 10.0 (**10**%)

Question 1

Not answered

Mark 0.0 out of 2.0



What is the voltage gain in V/V from the V4 input to the output for the operational amplifier circuit shown? Assume that the opamp is ideal, and use R1 = 7.8kΩ, R2 = 5.9kΩ, R3 = 7.0kΩ, R4 = 7.3kΩ and RF = 73.7kΩ.

Answer:

The correct answer is: 11.23

Question 2

Correct

Mark 0.0 out of 2.0

The input offset voltage of an integrated circuit opamp is the voltage which must be applied between the + and – inputs to set the output voltage equal to the positive power supply voltage.

Select one:

- True
- False ✓

The correct answer is 'False'.

Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **0.0/2.0**.

Question 3

Correct

Mark 1.0 out of 2.0

Errors in the output voltage of an actual integrated circuit operational amplifier can be caused by :

Select one:

- a. High slew rate for signals which change quickly
- b. Non-zero offset voltages or currents ✓
- c. High bandwidth for high frequency signals
- d. None of these
- e. High open-loop voltage gain

The correct answer is: Non-zero offset voltages or currents

Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **1.0/2.0**.

Question 4

Correct

Mark 0.0 out of 2.0

The ideal opamp assumption that there is zero current into the + and – inputs is based on
the fact that actual operational amplifiers are designed to have very high voltage gain.

Select one:

- True
- False ✓

The correct answer is 'False'.

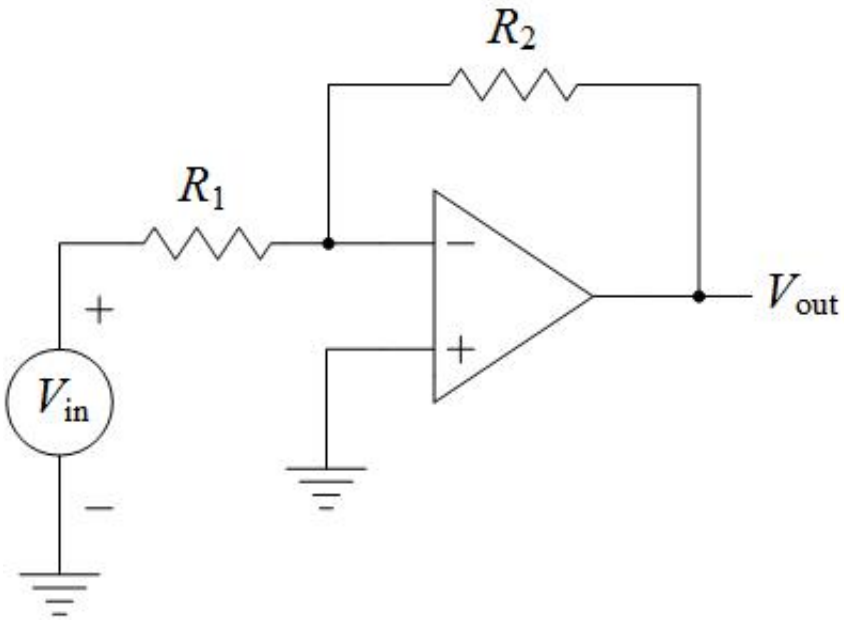
Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **0.0/2.0**.

Question 5

Not answered

Mark 0.0 out of 2.0



What is the voltage gain in dB for the operational amplifier circuit shown?
Assume that the opamp is ideal, and use R1 = 1.3kΩ and R2 = 24.6kΩ.

Answer: ✗

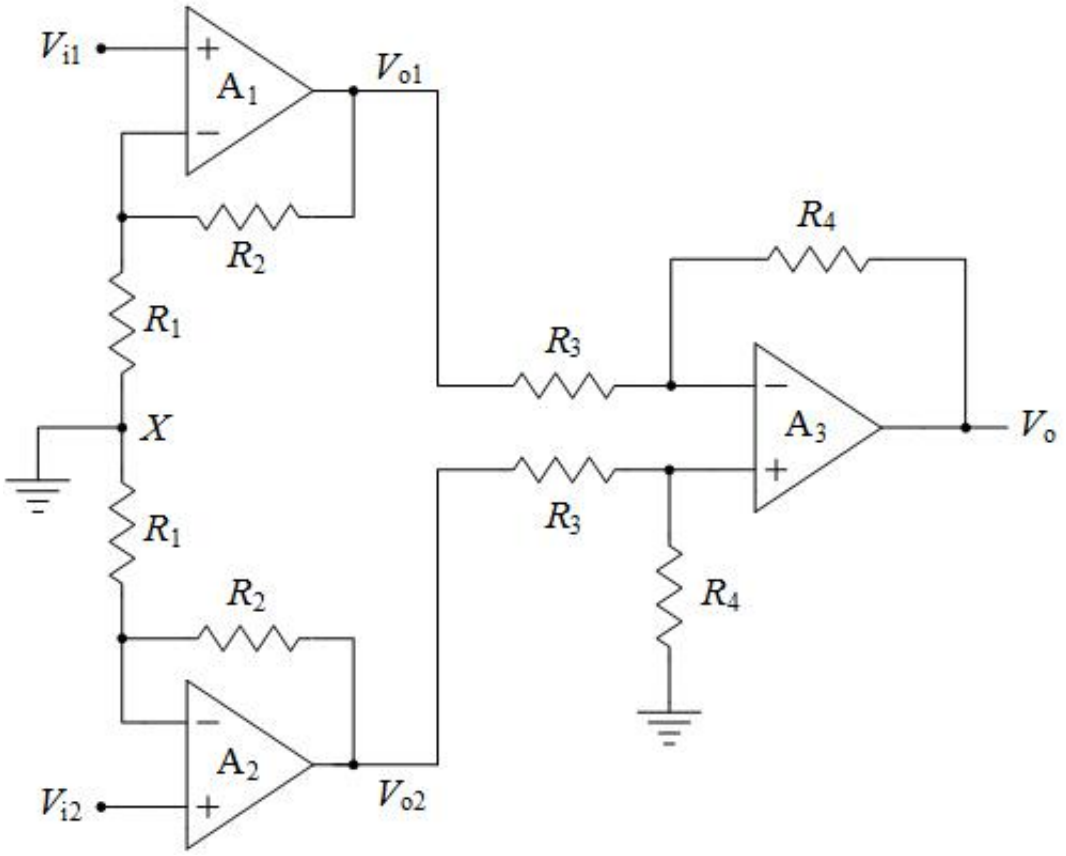
The correct answer is: 25.54

Started on	Thursday, 21 September 2017, 12:59 PM
State	Finished
Completed on	Thursday, 21 September 2017, 1:01 PM
Time taken	1 min 22 secs
Grade	**2.0** out of 10.0 (**20**%)

Question 1

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what is the common-mode voltage gain in V/V from the common-mode input voltage, Vicm = (Vi2+Vi1)/2, to the common-mode output voltage of the first stage, Vocm1 = (Vo2+Vo1)/2 ? Assume that all the opamps are ideal, and use R1 = 1.4kΩ, R2 = 79.1kΩ, R3 = 1.9kΩ and R4 = 59.7kΩ.

Answer:

The correct answer is: 57.50

Question 2

Correct

Mark 0.0 out of 2.0

Difference amplifiers provide a much higher input resistance and CMRR than a simple Instrumentation amplifier, but require additional opamps to accomplish this.

Select one:

- True
- False ✓

The correct answer is 'False'.

Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **0.0/2.0**.

Question 3

Correct

Mark 2.0 out of 2.0

If an instrumentation amplifier has a connection between the resistors in the first stage and ground, then it will suffer from which of the following disadvantages?

Select one:

- a. Varying the gain of the first stage will require changing two resistors instead of one
- b. In the first stage the common-mode gain will be just as large as the differential-mode gain
- c. The two amplifiers in first stage will be more difficult to match accurately
- d. The two signal paths in the first stage will be less symmetric
- e. All of these ✓

The correct answer is: All of these

Correct

Marks for this submission: 2.0/2.0.

Question 4

Correct

Mark 0.0 out of 2.0

By removing the connection in an instrumentation amplifier between the resistors in the first stage and ground, the common-mode gain for the first stage can be reduced to much less than one.

Select one:

- True
- False ✓

The correct answer is 'False'.

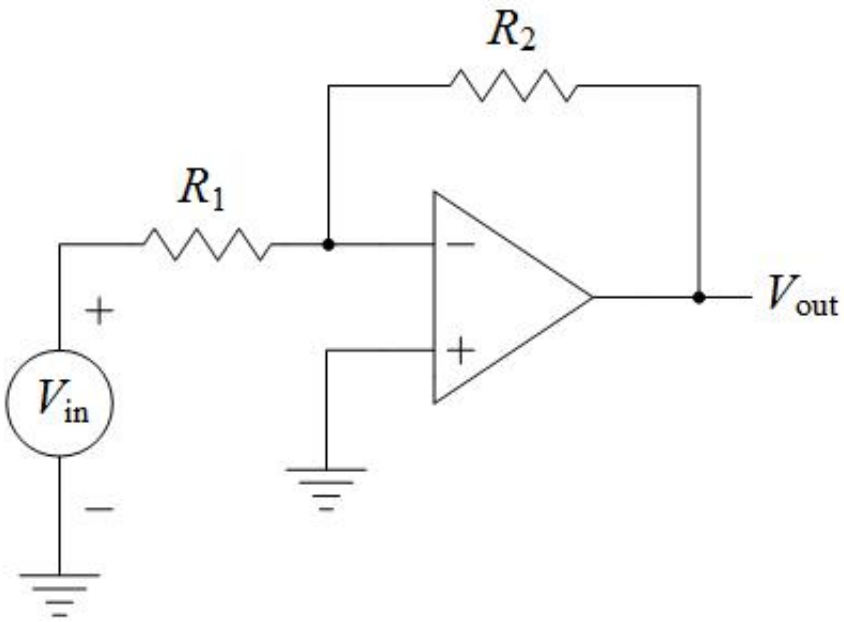
Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **0.0/2.0**.

Question 5

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what value must R1 be in kilohms in order to set the voltage gain to 23.4 dB ? Assume that the opamp is ideal, and use R2 = 14.3kΩ.

Answer: ✗

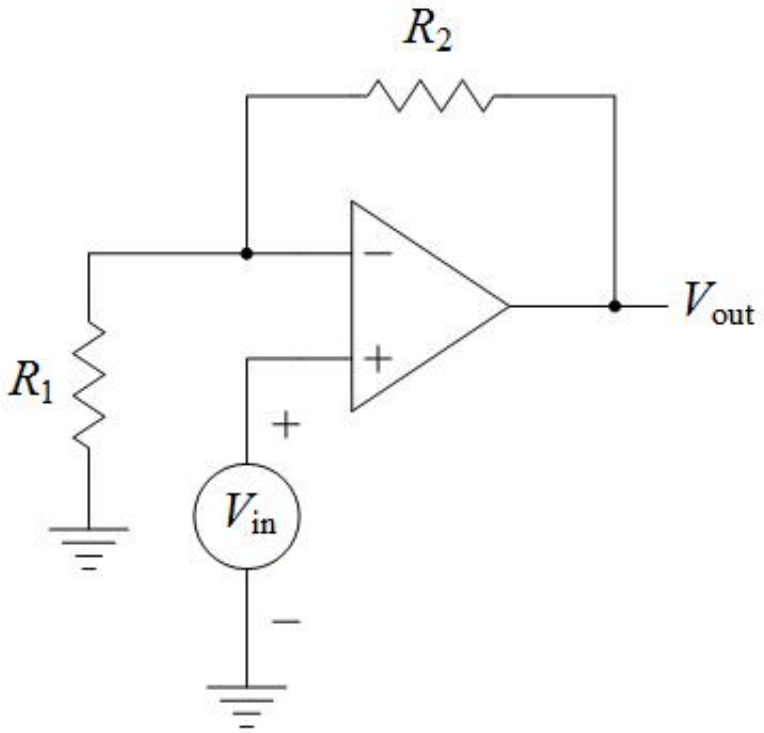
The correct answer is: 0.97

Started on	Thursday, 21 September 2017, 1:02 PM
State	Finished
Completed on	Thursday, 21 September 2017, 1:04 PM
Time taken	2 mins 4 secs
Grade	**0.0** out of 10.0 (**0**%)

Question 1

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, if the maximum percentage error in the closed-loop voltage gain must be no larger than 8.2 percent, then what is the minimum required open-loop voltage gain for the opamp in V/V ? Assume that the opamp has a finite open-loop voltage gain, but is ideal in all other respects. Use R1 = 5.0kΩ and R2 = 68.9kΩ.

Answer: ✗

The correct answer is: 165.5

Question 2

Correct

Mark 0.0 out of 2.0

The input offset voltage of an integrated circuit opamp causes a shift in the DC transfer curve of the opamp.

Select one:

- True ✓
- False

The correct answer is 'True'.

Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **0.0/2.0**.

Question 3

Correct

Mark 0.0 out of 2.0

Instrumentation amplifiers are often used instead of simple difference amplifiers to :

Select one:

- a. Increase the amplifier's input resistance ✓
- b. Reduce the amplifier's output resistance
- c. Increase the amplifier's common-mode gain
- d. Reduce the amount of power used by the amplifier
- e. All of these

The correct answer is: Increase the amplifier's input resistance

Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **0.0/2.0**.

Question 4

Correct

Mark 0.0 out of 2.0

Instrumentation amplifiers provide a much higher input resistance and CMRR than a simple Difference amplifier, but require additional opamps to accomplish this.

Select one:

- (•) True ✓
- ( ) False

The correct answer is 'True'.

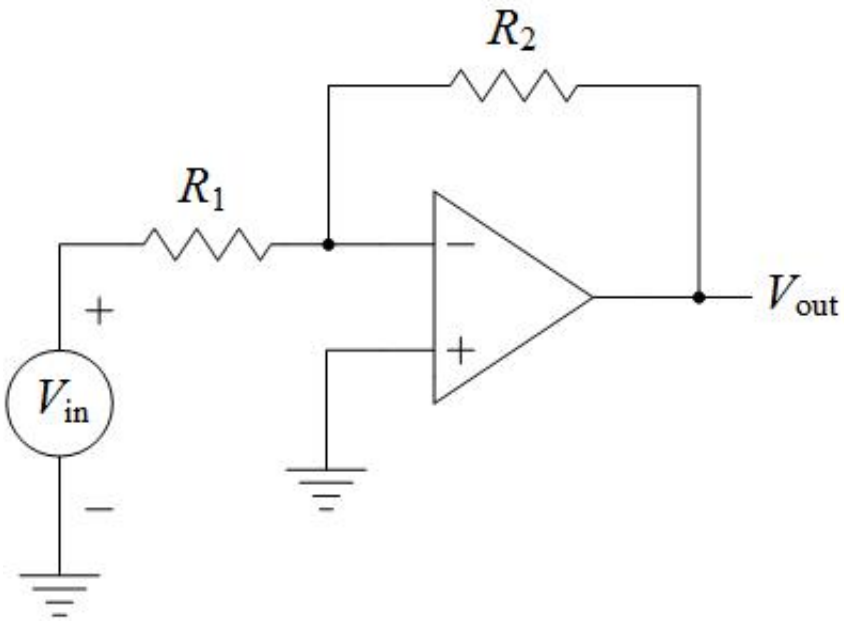
Correct

Marks for this submission: 2.0/2.0. Accounting for previous tries, this gives **0.0/2.0**.

Question 5

Not answered

Mark 0.0 out of 2.0



For the operational amplifier circuit shown, what value must R2 be in kilohms in order to set the voltage gain to -75.3 V/V ? Assume that the opamp is ideal, and use R1 = 6.3kΩ.

Answer: ✗

The correct answer is: 474.39