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NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » Basic Electrical Circuits (course)

Announcements (announcements) About the Course (preview) Ask a Question (forum) Progress (student/home) Mentor (student/mentor)

Unit 10 - Week 8: Opamp and negative feedback; Example circuits and additional topics

Course outline

How does an NPTEL online course work?

Week 0

Week 1: Preliminaries; Current and voltage; Electrical elements and circuits; Kirchoff's laws; Basic elements; Linearity

Week 2: Elements in series and parallel; Controlled sources

Week 3: Power and energy in electrical elements; Circuit analysis methods

Week 4: Nodal analysis

Week 5 : Mesh analysis; Circuit theorems

Week 6: More circuit theorems; Two port parameters

Week 7: Two port parameters continued; Reciprocity in resistive networks

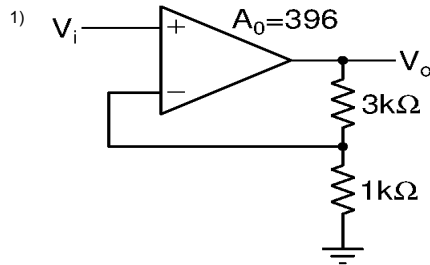
Week 8: Opamp and negative feedback; Example circuits and additional topics

- Feedback amplifier using an opamp (unit? unit=17&lesson=123)
- Ideal opamp (unit? unit=17&lesson=129)
- Negative feedback around the opamp (unit? unit=17&lesson=124)
- Finding opamp signs for negative feedback (unit? unit=17&lesson=125)
- Example: Determining opamp sign for negative feedback (unit? unit=17&lesson=126)
- Analysis of circuits with opamps (unit? unit=17&lesson=135)

Assignment 8

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2020-11-11, 23:59 IST.



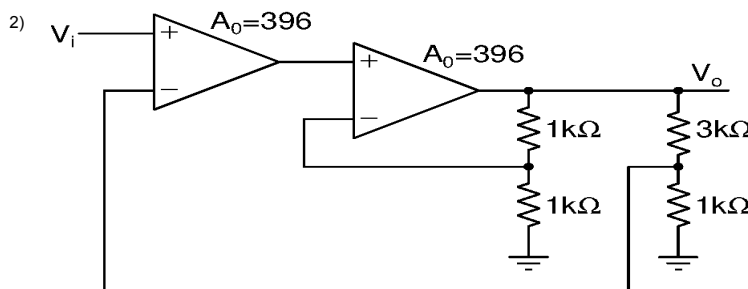
Determine the percentage error from the ideal gain in the figure above. Ideal gain refers to V_o/V_i with an ideal opamps. Percentage error is defined as

$$100 (V_o/V_i|_{ideal} - V_o/V_i)$$

(The answer must be the percent error. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 3.8,4.2

1 point



Determine the percentage error from the ideal gain in the figure above. Ideal gain refers to V_o/V_i with an ideal opamps. Percentage error is defined as

$$100 (V_o/V_i|_{ideal} - V_o/V_i)$$

(The answer must be the percent error. Round off fractional answers to one decimal place.)

- Inverting amplifier (unit? unit=17&lesson=127)
- Summing amplifier (unit? unit=17&lesson=128)
- Instrumentation amplifier (unit?unit=17&lesson=130)
- Negative resistance and Miller effect (unit? unit=17&lesson=131)
- Finding opamp signs for negative feedback-circuits with multiple opamps (unit? unit=17&lesson=132)
- Opamp supply voltages and saturation (unit? unit=17&lesson=133)
- KCL with an opamp and supply currents (unit? unit=17&lesson=134)
- Week 8 Lecture material (unit?unit=17&lesson=193)
- Basic Electrical Circuits : Week 8 Feedback Form (unit?unit=17&lesson=201)
- More on opamps: Example circuits and additional topics (unit?unit=17&lesson=220)
- Quiz : Assignment 8 (assessment?name=221)
- Assignment 8 solutions (unit? unit=17&lesson=225)

Week 9 :First Order Circuits

Week 10 : First order circuits with time-varying inputs

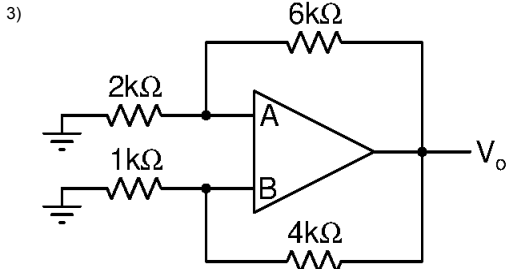
Week 11: Second order system response

Week 12: Direct calculation of steady state response from equivalent components

Text Transcripts

Download Videos

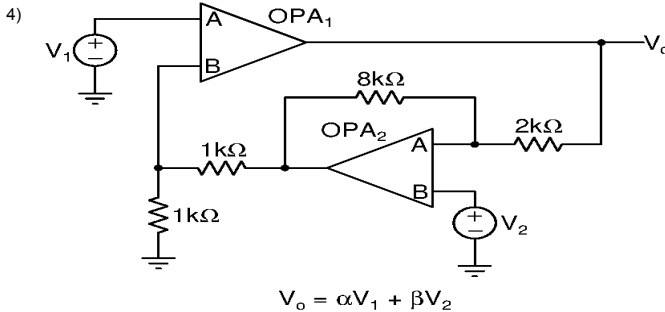
No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1.95,2.15



Determine the negative terminal of the opamp in the figure above so that it is in negative feedback.

- A
- B

No, the answer is incorrect.
Score: 0
Accepted Answers:
A



In the circuit above, determine the coefficients α and β in the expression for the output V_o .

(The answer must be the coefficient values. Round off fractional answers to two decimal places.)

Value of α

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) -0.6,-0.4

5) Value of β

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1.1,1.3

6) Determine the negative terminals of the two opamps in the figure above so that they are in negative feedback.

Negative terminal of OPA₁

- A
- B

No, the answer is incorrect.
Score: 0
Accepted Answers:

1 point
1 point

1 point

1 point
1 point

A

7) Negative terminal of OPA₂

1 point

- A
- B

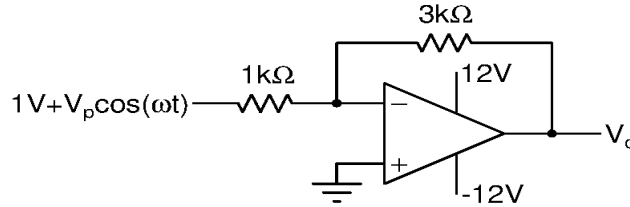
No, the answer is incorrect.

Score: 0

Accepted Answers:

A

8)



In the figure above, determine the highest amplitude V_p such that the opamp is not saturated.

(The answer must be in volts (V). Round off fractional answers to two decimal places.)

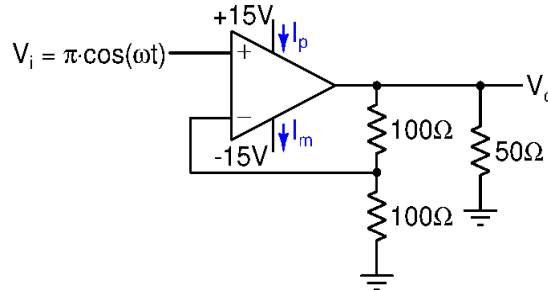
No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 2.90,3.10

9)



In the circuit above, $I_p = I_m = 3 \text{ mA}$ when $V_i = 0$. Determine the average current drawn from the supplies when $V_i = \pi \cos(\omega t)$.

(The answer must be in milliamperes (mA). Round off fractional answers to one decimal place.)

No, the answer is incorrect.

Score: 0

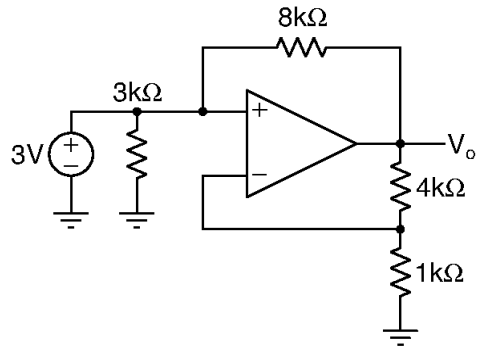
Accepted Answers:

(Type: Range) 52,54

1 point

1 point

10)



In the circuit above, determine the power *delivered* by the 3 V source.

(The answer must be in **milliwatts (mW)**. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) -1.6,-1.4

1 point