

Math102 Term182  
Sec2 Quiz 6

Name	ID	Sr
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**Instruction: CIRCLE one answer and SHOW all your work to get full mark**

Q1) The series

$$\sum_{n=1}^{\infty} \frac{(-1)^n + 2^{n+1}}{3^n}$$

- a) is convergent and its sum is  $\frac{15}{4}$
- b) is convergent and its sum is  $\frac{9}{4}$
- c) is convergent and its sum is  $\frac{11}{4}$
- d) is convergent and its sum is  $\frac{31}{4}$
- e) is convergent and its sum is  $\frac{23}{4}$
- f) is divergent

Q2)The series

$$\sum_{n=1}^{\infty} \left[ \cos^{-1} \left( \frac{1}{n} \right) - \cos^{-1} \left( \frac{1}{n+2} \right) \right]$$

- a) is convergent and its sum is  $\frac{\pi}{3}$
- b) is convergent and its sum is  $\frac{-2\pi}{3}$
- c) is convergent and its sum is  $\frac{-\pi}{2}$
- d) is convergent and its sum is  $\frac{-\pi}{6}$
- e) is convergent and its sum is  $\frac{4\pi}{3}$
- f) is divergent

Q3) The series  $\sum_{n=3}^{\infty} \frac{1}{n \ln n}$

- a) is convergent by the limit comparison test
- b) is a convergent p-series
- c) is convergent by the integral test
- d) is divergent by the integral test
- e) is divergent geometric series
- f) is divergent by the divergence test

Q4) Which of the following series is convergent ?

I.  $\sum_{n=3}^{\infty} \frac{2 + \sin(3n)}{2^n}$

II.  $\sum_{n=3}^{\infty} \tan^{-1}(-2n)$

III.  $\sum_{n=3}^{\infty} \frac{\sqrt{n^2 + 1}}{n^3 + 5}$

- a) I and II only
- b) I only
- c) I and III only
- d) II and III only
- e) all of I, II, and III
- f) none of I, II, or III

Math102 Term182  
Sec 5 Quiz 6

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**Instruction: CIRCLE one answer and SHOW all your work to get full mark**

Q1) The series

$$\sum_{n=1}^{\infty} \frac{1 + (-2)^n}{3^{n+1}}$$

- a) is convergent and its sum is  $\frac{7}{10}$
- b) is convergent and its sum is  $\frac{9}{10}$
- c) is convergent and its sum is  $\frac{3}{10}$
- d) is convergent and its sum is  $\frac{1}{30}$
- e) is convergent and its sum is  $\frac{5}{30}$
- f) is divergent

Q2)The series

$$\sum_{n=1}^{\infty} \left[ \cos\left(\frac{1}{n}\right) - \cos\left(\frac{1}{n+2}\right) \right]$$

- a) is convergent and its sum is  $-1 + \cos 1 + \cos \frac{1}{2}$
- b) is convergent and its sum is  $-1 + \cos 1$
- c) is convergent and its sum is  $-2 + \cos 1 + \cos \frac{1}{2}$
- d) is convergent and its sum is  $\cos 1 + \cos \frac{1}{2}$
- e) is convergent and its sum is  $\cos 1 + \cos 2$
- f) is divergent

Q3) The series  $\sum_{n=3}^{\infty} \frac{1}{n\sqrt{\ln n}}$

- a) is convergent by the limit comparison test with  $b_n = \frac{1}{n^2}$
- b) is a convergent p-series
- c) is convergent by the integral test
- d) is divergent by the integral test
- e) is divergent geometric series
- f) is divergent by the divergence test

Q4) Which of the following series is convergent ?

I.  $\sum_{n=3}^{\infty} \frac{e^n}{n^2}$

II.  $\sum_{n=3}^{\infty} \frac{\cos^2 n}{n\sqrt{n}}$

III.  $\sum_{n=3}^{\infty} n \tan\left(\frac{1}{n}\right)$

- a) I and II only
- b) II only
- c) I and III only
- d) II and III only
- e) all of I, II, and III
- f) none of I, II, or III

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Sec19 Quiz 6

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**Instruction: CIRCLE one answer and SHOW all your work to get full mark**

Q1) The series

$$\sum_{n=2}^{\infty} \frac{3^{n+1}}{5^{n-1}}$$

- a) is convergent and its sum is  $\frac{45}{2}$
- b) is convergent and its sum is  $\frac{27}{2}$
- c) is convergent and its sum is  $\frac{75}{2}$
- d) is convergent and its sum is  $\frac{45}{4}$
- e) is convergent and its sum is  $\frac{21}{4}$
- f) is divergent

Q2) The series  $\sum_{n=1}^{\infty} [e^{1/n} - e^{1/(n+2)}]$

- a) is convergent and its sum is  $e + \sqrt{e}$
- b) is convergent and its sum is  $e - 1$
- c) is convergent and its sum is  $e + \sqrt{e} - 2$
- d) is convergent and its sum is  $-e + \sqrt{e}$
- e) is convergent and its sum is  $e + \sqrt{e} - 1$
- f) is divergent

Q3) The series  $\sum_{n=3}^{\infty} \frac{1}{n[1 + (\ln n)^2]}$

- a) is convergent by the limit comparison test with  $b_n = \frac{1}{n^2}$
- b) is a convergent p-series
- c) is convergent by the integral test
- d) is divergent by the integral test
- e) is divergent geometric series
- f) is divergent by the divergence test

Q4) Which of the following series is convergent ?

I.  $\sum_{n=3}^{\infty} \frac{1}{5^n + n^2}$

II.  $\sum_{n=3}^{\infty} \frac{n + 2^n}{n + 3^n}$

III.  $\sum_{n=3}^{\infty} \cos\left(\frac{1}{2n^2 + 1}\right)$

- a) I and II only
- b) I only
- c) I and III only
- d) II and III only
- e) all of I, II, and III
- f) none of I, II, or III

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Sec24 Quiz 6

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**Instruction: CIRCLE one answer and SHOW all your work to get full mark**

Q1) The series

$$\sum_{n=1}^{\infty} (-1)^n \frac{3^{n-1}}{2^{2n+2}}$$

- a) is convergent and its sum is  $\frac{1}{7}$
- b) is convergent and its sum is  $\frac{9}{28}$
- c) is convergent and its sum is  $\frac{-1}{28}$
- d) is convergent and its sum is  $\frac{31}{4}$
- e) is convergent and its sum is  $\frac{-1}{4}$
- f) is divergent

Q2)The series

$$\sum_{n=1}^{\infty} [\tan^{-1}(n) - \tan^{-1}(n + 2)]$$

- a) is convergent and its sum is  $\frac{\pi}{4}$
- b) is convergent and its sum is  $\frac{-\pi}{4}$
- c) is convergent and its sum is  $\frac{\pi}{4} + \tan^{-1} 2$
- d) is convergent and its sum is  $\frac{-3\pi}{4}$
- e) is convergent and its sum is  $-\frac{3\pi}{4} + \tan^{-1} 2$
- f) is divergent

Q3) The series  $\sum_{n=3}^{\infty} \frac{1}{n(\ln n)^3}$

- a) is convergent by the limit comparison test with  $b_n = \frac{1}{n^2}$
- b) is a convergent p-series
- c) is convergent by the integral test
- d) is divergent by the integral test
- e) is divergent geometric series
- f) is divergent by the divergence test

Q4) Which of the following series is convergent ?

I.  $\sum_{n=3}^{\infty} \cos(2n)$

II.  $\sum_{n=3}^{\infty} \left(\frac{\cos n}{n}\right)^2$

III.  $\sum_{n=3}^{\infty} \frac{\ln n}{n^2}$

- a) I and II only
- b) II and III only
- c) I and III only
- d) III only
- e) all of I, II, and III
- f) none of I, II, or III