This print-out should have 8 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

001 10.0 points

Determine whether the series

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

converges or diverges.

1. series is divergent

2. series is convergent

002 10.0 points

Determine whether the series

$$\sum_{n=1}^{\infty} \frac{3}{n^2+16}$$

converges or diverges.

1. series diverges

2. series converges

003 10.0 points

Determine whether the series

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

converges or diverges.

1. series is convergent

2. series is divergent

004 10.0 points

Determine the convergence or divergence of the series

$$(A) \qquad 1+\frac{1}{4}+\frac{1}{9}+\frac{1}{16}+\frac{1}{25}+\dots,$$

and

$$(B) \qquad \sum_{m=1}^{\infty} m e^{-m^2}.$$

1. A divergent, B convergent

2. both series divergent

3. both series convergent

4. A convergent, B divergent

005 10.0 points

Which of the following series are convergent:

A. $\displaystyle\sum_{n=1}^{\infty} \frac{3}{n^2+1}$

B. $1+\frac{1}{4}+\frac{1}{9}+\frac{1}{16}+\dots$

C. $\displaystyle\sum_{n=1}^{\infty} \frac{2}{n^{3/2}}$

1. A and B only

2. none of them

3. A only

4. C only

5. all of them

6. B only

7. B and C only

8. A and C only

006 10.0 points

Determine whether the series

$$\sum_{k=1}^{\infty} \frac{3}{k(\ln(4k))^2}$$

is convergent or divergent.

1. series converges

2. series diverges

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007 10.0 points

First find a_n so that

$$\sum_{n=1}^{\infty} a_n = 6 + \frac{3}{\sqrt{2}} + \frac{2}{\sqrt{3}} + \frac{3}{4} + \frac{6}{5\sqrt{5}} + \dots$$

and then determine whether the series converges or diverges.

1. $a_n = \dfrac{6}{n^{1/2}}$, series converges

2. $a_n = \dfrac{6}{n^{1/2}}$, series diverges

3. $a_n = \dfrac{6}{n^{3/2}}$, series converges

4. $a_n = \dfrac{6}{n^{3/2}}$, series diverges

5. $a_n = \dfrac{3}{2n^{3/2}}$, series converges

6. $a_n = \dfrac{3}{2n^{3/2}}$, series diverges

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008 10.0 points

Determine whether the series

$$\sum_{m=1}^{\infty} \frac{3\ln(5m)}{m^2}$$

is convergent or divergent.

1. series converges

2. series diverges