**Chapter test 8**

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Question 1

Marks: 1

Use the binomial series to expand the function as a power series. Find the radius of convergence.   
  
[\frac{x^2}{\sqrt{2+x}}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\frac%7bx%5e2%7d%7b\sqrt%7b2+x%7d%7d)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. |x| < 6 |  |
|  | b. |x| < 2 |  |
|  | c. None of the other choices is correct |  |
|  | d. |x| < 1 |  |

Question 2

Marks: 1

Test the series for convergence or divergence.   
  
[\sum_{k=1}^\infty\frac{k\ln k}{(k+4)^3}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\sum_%7bk=1%7d%5e\infty\frac%7bk\ln+k%7d%7b(k+4)%5e3%7d)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. Divergent |  |
|  | b. Convergent |  |

Question 3

Marks: 1

Find the Maclaurin series for *f* and its radius of convergence.  
  
f(x) = ln(1-x)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. [\sum_{n=0}^\infty\frac{x^n}{n},\, R=2](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\sum_%7bn=0%7d%5e\infty\frac%7bx%5en%7d%7bn%7d,\,+R=2) |  |
|  | b. None of the other choices is correct |  |
|  | c. [-\sum_{n=0}^\infty\frac{x^n}{n},\, R=1](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?-\sum_%7bn=0%7d%5e\infty\frac%7bx%5en%7d%7bn%7d,\,+R=1) |  |
|  | d. [\sum_{n=0}^\infty(-1)^n\frac{x^n}{n},\, R=1/2](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\sum_%7bn=0%7d%5e\infty(-1)%5en\frac%7bx%5en%7d%7bn%7d,\,+R=1/2) |  |

Question 4

Marks: 1

Find all positive values of *b* for which the series

[\sum_{n=1}^\infty 4b^{\ln 3n}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\sum_%7bn=1%7d%5e\infty+4b%5e%7b\ln+3n%7d)

converges.

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. [b<1/e](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?b&lt;1/e) |  |
|  | b. [b<1/e^4](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?b&lt;1/e%5e4) |  |
|  | c. [b<1/e^2](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?b&lt;1/e%5e2) |  |
|  | d. [b<1/e^3](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?b&lt;1/e%5e3) |  |

Question 5

Marks: 1

Find the interval of convergence of the series.   
  
[\sum_{n=1}^\infty\frac{6x^n}{\sqrt[5]{n}}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\sum_%7bn=1%7d%5e\infty\frac%7b6x%5en%7d%7b\sqrt%5b5%5d%7bn%7d%7d)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. [-1,1] |  |
|  | b. [-1, 1) |  |
|  | c. (-1,1) |  |
|  | d. (-1,1] |  |

Question 6

Marks: 1

Given the two series   
  
[A=1+\frac{1}{16}+\frac{1}{81}+\frac{1}{256}+\frac{1}{625}+\...](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?A=1+\frac%7b1%7d%7b16%7d+\frac%7b1%7d%7b81%7d+\frac%7b1%7d%7b256%7d+\frac%7b1%7d%7b625%7d+\...)  
and [B=\sum_{n=1}^\infty n^8e^{-n^9}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?B=\sum_%7bn=1%7d%5e\infty+n%5e8e%5e%7b-n%5e9%7d)determine whether each series is convergent or divergent and choose the correct statement.   
  
Select the correct answer.

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. Series *A* is divergent, series *B* is convergent. |  |
|  | b. Series *A* is convergent, series *B* is divergent. |  |
|  | c. Both series are divergent. |  |
|  | d. Both series are convergent. |  |

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