**Advanced Mathematics 1 (Examination Office)**

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**Quiz Chapter 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.   
  
[\sqrt[4]{1+x^5}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\sqrt%5b4%5d%7b1+x%5e5%7d)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. |x| < 1 |  |
|  | b. |x| < 4 |  |
|  | c. None of the other choices is correct |  |
|  | d. |x| < 2 |  |

Question 2

Marks: 1

Use the binomial series to expand the function as a power series. Find the radius of convergence.  
  
[\frac{1}{(1+x)^4}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\frac%7b1%7d%7b(1+x)%5e4%7d)  
  
Select the correct answer.

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. | *x* | < 10 |  |
|  | b. | *x* | < 0.1 |  |
|  | c. | *x* | < 1.8 |  |
|  | d.   | *x* | < 8 |  |
|  | e. | *x* | < 1 |  |

Question 3

Marks: 1

Find the interval of convergence of the series.   
  
[\sum_{n=1}^\infty (-1)^n\frac{(x+8)^n}{n6^n}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\sum_%7bn=1%7d%5e\infty+(-1)%5en\frac%7b(x+8)%5en%7d%7bn6%5en%7d)  
  
Select the correct answer.

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. [-14, -2) |  |
|  | b.   [-1,1] |  |
|  | c. (-8, 6] |  |
|  | d. diverges everywhere |  |
|  | e. (-14, -2] |  |
|  | f. (2, 14] |  |

Question 4

Marks: 1

Find a formula for the general term [a_n](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?a_n)of the sequence, assuming that the pattern of the first few terms continues.   
  
[\{1, 7, 13, 19,...\}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\%7b1,+7,+13,+19,...\%7d)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. n+6 |  |
|  | b. 6n + 2 |  |
|  | c. 6n - 5 |  |
|  | d. None of these |  |

Question 5

Marks: 1

Which of the following series is convergent?   
  
  
  
a. [\sum_{m=1}^\infty\frac{10}{m^8+3}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\sum_%7bm=1%7d%5e\infty\frac%7b10%7d%7bm%5e8+3%7d)b. [\sum_{m=1}^\infty10\frac{\ln 6m}{m^2}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\sum_%7bm=1%7d%5e\infty10\frac%7b\ln+6m%7d%7bm%5e2%7d)c. [\sum_{m=1}^\infty\frac{5}{m\ln 3m}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\sum_%7bm=1%7d%5e\infty\frac%7b5%7d%7bm\ln+3m%7d)  
Select the correct answer.

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. c |  |
|  | b. a,b,c |  |
|  | c. b,c |  |
|  | d. a,b |  |

Question 6

Marks: 1

Test the series for convergence or divergence.   
  
[\sum_{m=1}^\infty (\sqrt[m]{3}-1)^m](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\sum_%7bm=1%7d%5e\infty+(\sqrt%5bm%5d%7b3%7d-1)%5em)

Choose one answer.

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





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