Marks: 1

Determine whether the sequence converges or diverges. If it converges, find the limit.  
  
[a_n=\sqrt[n]{3^{2n+1}}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?a_n%3D%5Csqrt%5Bn%5D%7B3%5E%7B2n%2B1%7D%7D)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. Diverges |  |
|  | b. Converges, 81 |  |
|  | c. Converges, 27 |  |
|  | d. Converges,  9 |  |

Question 2

Marks: 1

Use the binomial series to expand the function as a power series. Find the radius of convergence.   
  
[\frac{1}{(2+x)^2}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?%5Cfrac%7B1%7D%7B%282%2Bx%29%5E2%7D)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. |x| < 2 |  |
|  | b. |x| < 1 |  |
|  | c. [|x|\leq 1](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?%7Cx%7C%5Cleq+1) |  |
|  | d. [|x|\leq 2](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?%7Cx%7C%5Cleq+2) |  |

Question 3

Marks: 1

Which of the given series is (are) convergent?   
  
Select the correct answer.  
  
a. [\frac{7}{6}-\frac{7}{7}+\frac{7}{8}-\frac{7}{9}+\frac{7}{10}-...](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?%5Cfrac%7B7%7D%7B6%7D-%5Cfrac%7B7%7D%7B7%7D%2B%5Cfrac%7B7%7D%7B8%7D-%5Cfrac%7B7%7D%7B9%7D%2B%5Cfrac%7B7%7D%7B10%7D-...)  
b. [-\frac{1}{6}+\frac{2}{7}-\frac{3}{8}+\frac{4}{9}-\frac{5}{10}+...](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?-%5Cfrac%7B1%7D%7B6%7D%2B%5Cfrac%7B2%7D%7B7%7D-%5Cfrac%7B3%7D%7B8%7D%2B%5Cfrac%7B4%7D%7B9%7D-%5Cfrac%7B5%7D%7B10%7D%2B...)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. b |  |
|  | b. none of these |  |
|  | c. a |  |
|  | d. a, b |  |

Question 4

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=1](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?-%5Csum_%7Bn%3D0%7D%5E%5Cinfty%5Cfrac%7Bx%5En%7D%7Bn%7D%2C%5C%2C+R%3D1) |  |
|  | b. [\sum_{n=0}^\infty\frac{x^n}{n},\, R=2](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?%5Csum_%7Bn%3D0%7D%5E%5Cinfty%5Cfrac%7Bx%5En%7D%7Bn%7D%2C%5C%2C+R%3D2) |  |
|  | c. [\sum_{n=0}^\infty(-1)^n\frac{x^n}{n},\, R=1/2](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?%5Csum_%7Bn%3D0%7D%5E%5Cinfty%28-1%29%5En%5Cfrac%7Bx%5En%7D%7Bn%7D%2C%5C%2C+R%3D1%2F2) |  |
|  | d. None of the other choices is correct |  |

Question 5

Marks: 1

Given the two series  
[A=1+\frac{1}{4}+\frac{1}{9}+\frac{1}{16}+\frac{1}{25}+...](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?A%3D1%2B%5Cfrac%7B1%7D%7B4%7D%2B%5Cfrac%7B1%7D%7B9%7D%2B%5Cfrac%7B1%7D%7B16%7D%2B%5Cfrac%7B1%7D%7B25%7D%2B...)and [B=\sum_{n=1}^\infty n^5e^{-n^6}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?B%3D%5Csum_%7Bn%3D1%7D%5E%5Cinfty+n%5E5e%5E%7B-n%5E6%7D)determine whether each series is convergent or divergent and choose the correct statement.   
  
Select the correct answer.

Choose one answer.

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

Question 6

Marks: 1

Find the interval of convergence of the series.   
  
[\sum_{n=1}^\infty\frac{x^n}{n8^n}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?%5Csum_%7Bn%3D1%7D%5E%5Cinfty%5Cfrac%7Bx%5En%7D%7Bn8%5En%7D)  
  
Select the correct answer.

Choose one answer.

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