Marks: 1

Evaluate the integral.

[\int\frac{\cos x}{4+\sin^2 x}dx](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\int\frac%7b\cos+x%7d%7b4+\sin%5e2+x%7ddx)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. [\tan^{-1}(\frac{\sin x}{2})+C](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\tan%5e%7b-1%7d(\frac%7b\sin+x%7d%7b2%7d)+C) |  |
|  | b. [(1/2)\tan^{-1}(\frac{\sin x}{2})+C](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?(1/2)\tan%5e%7b-1%7d(\frac%7b\sin+x%7d%7b2%7d)+C) |  |
|  | c. None of these |  |
|  | d. [(1/2)\tan^{-1}(\sin x)+C](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?(1/2)\tan%5e%7b-1%7d(\sin+x)+C) |  |

Question 2

Marks: 1

Use the Trapezoidal Rule with n = 4 steps to estimate the integral.[\int_0^8 xdx](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\int_0%5e8+xdx)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. 40 |  |
|  | b. 32 |  |
|  | c. 64 |  |
|  | d. 16 |  |

Question 3

Marks: 1

Evaluate the integral if it is convergent.  
  
[\int_0^\infty e^{-6x}dx](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\int_0%5e\infty+e%5e%7b-6x%7ddx)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. 1/6 |  |
|  | b. 1/3 |  |
|  | c. 1 |  |
|  | d. divergent |  |

Question 4

Marks: 1

Determine whether the improper integral converges or diverges.[\displaystyle\int_0^{\pi/2}\frac{\sin\sqrt{t}}{\sqrt{t}}dt](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle\int_0%5e%7b\pi/2%7d\frac%7b\sin\sqrt%7bt%7d%7d%7b\sqrt%7bt%7d%7ddt)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. Diverges |  |
|  | b. Converges |  |

Question 5

Marks: 1

Which of the following is the **correct partial fraction form** of the given function (DO NOT evaluate the coefficients A, B, C, ...)  
  
[\displaystyle f(x)=\frac{x^3-4x-10}{x^2-x-6}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle+f(x)=\frac%7bx%5e3-4x-10%7d%7bx%5e2-x-6%7d)  
  
(i) [\displaystyle\frac{A}{x+2}+\frac{B}{x-3}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle\frac%7bA%7d%7bx+2%7d+\frac%7bB%7d%7bx-3%7d)  
  
(ii) [\displaystyle x+\frac{A}{x+2}+\frac{B}{x-3}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle+x+\frac%7bA%7d%7bx+2%7d+\frac%7bB%7d%7bx-3%7d)  
  
(iii) [\displaystyle x^2+\frac{A}{x+2}+\frac{B}{x-3}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle+x%5e2+\frac%7bA%7d%7bx+2%7d+\frac%7bB%7d%7bx-3%7d)  
  
(iv) [\displaystyle x^3+\frac{A}{x+2}+\frac{B}{x-3}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle+x%5e3+\frac%7bA%7d%7bx+2%7d+\frac%7bB%7d%7bx-3%7d)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. (iv) |  |
|  | b. None of the other choices is correct |  |
|  | c. (i) |  |
|  | d. (iii) |  |
|  | e. (ii) |  |

Question 6

Marks: 1

Evaluate the integral.

[\int_0^{\pi/6}\sin^3 9x\, dx](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\int_0%5e%7b\pi/6%7d\sin%5e3+9x\,+dx)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. 0 |  |
|  | b. 4/27 |  |
|  | c. 2/9 |  |
|  | d. 2/27 |  |