1

Marks: 1

Evaluate the integral.

[\int_0^{\pi/2} \cos 6t\, \cos 5t\, dt](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\int_0%5e%7b\pi/2%7d+\cos+6t\,+\cos+5t\,+dt)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. 5/11 |  |
|  | b. 12/11 |  |
|  | c. 10/11 |  |
|  | d. 7/11 |  |

Question2

Marks: 1

Evaluate  
  
[\displaystyle\int_{-\infty}^0\frac{6}{10x-7}dx](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle\int_%7b-\infty%7d%5e0\frac%7b6%7d%7b10x-7%7ddx)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. ln(3/5) |  |
|  | b. 0 |  |
|  | c. divergent |  |
|  | d. 3/5 |  |

Question3

Marks: 1

Determine whether the improper integral converges or diverges.[\displaystyle\int_0^9\frac{dx}{81-x^2}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle\int_0%5e9\frac%7bdx%7d%7b81-x%5e2%7d)

Choose one answer.

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

Question4

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. [(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) |  |
|  | d. None of these |  |

Question5

Marks: 1

Use the Trapezoidal Rule to approximate [\int_2^3 e^{2/x}dx](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\int_2%5e3+e%5e%7b2/x%7ddx) for *n* = 4. Round the result to four decimal places.

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. 2.2651 |  |
|  | b. 2.4783 |  |
|  | c. 1.1356 |  |
|  | d. 3.1245 |  |

Question6

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