**1**

Marks: 1

Evaluate the integral.

[\int6\cos^3 3x\, dx](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\int6\cos%5e3+3x\,+dx)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. [2\sin 3x-(2/3)\cos^3 3x+C](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?2\sin+3x-(2/3)\cos%5e3+3x+C) |  |
|  | b. [2\sin 3x-(2/3)\sin^3 3x+C](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?2\sin+3x-(2/3)\sin%5e3+3x+C) |  |
|  | c. [6\sin 3x+(2/3)\sin^3 3x+C](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?6\sin+3x+(2/3)\sin%5e3+3x+C) |  |
|  | d. [6\sin 3x-(2/3)\sin^3 3x+C](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?6\sin+3x-(2/3)\sin%5e3+3x+C) |  |

Question**2**

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{1}{x^3+2x^2+x}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle+f(x)=\frac%7b1%7d%7bx%5e3+2x%5e2+x%7d)  
  
(i) [\displaystyle\frac{A}{x}+\frac{B}{x+1}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle\frac%7bA%7d%7bx%7d+\frac%7bB%7d%7bx+1%7d)  
  
(ii) [\displaystyle\frac{A}{x}+\frac{B}{(x+1)^2}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle\frac%7bA%7d%7bx%7d+\frac%7bB%7d%7b(x+1)%5e2%7d)  
  
(iii) [\displaystyle\frac{A}{x}+\frac{B}{x+1}+\frac{C}{(x+1)^2}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle\frac%7bA%7d%7bx%7d+\frac%7bB%7d%7bx+1%7d+\frac%7bC%7d%7b(x+1)%5e2%7d)

Choose one answer.

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

Question**3**

Marks: 1

Determine whether the improper integral converges or diverges.[\displaystyle\int_1^\infty\frac{\sqrt{2x+5}}{x^2}dx](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\displaystyle\int_1%5e\infty\frac%7b\sqrt%7b2x+5%7d%7d%7bx%5e2%7ddx)

Choose one answer.

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

Question**4**

Marks: 1

Use Simpson's Rule with n = 4 steps to estimate the integral.

[\int_1^3 (4x+6)\, dx](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\int_1%5e3+(4x+6)\,+dx)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. 56 |  |
|  | b. 70/3 |  |
|  | c. 28 |  |
|  | d. 14 |  |

Question**5**

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

Question**6**

Marks: 1

Evaluate the integral.

[\int\frac{\sqrt{9+2x} }{x}dx](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\int\frac%7b\sqrt%7b9+2x%7d+%7d%7bx%7ddx)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. [2^{\sqrt{9+2x}}+3\tan^{-1}\big(\frac{\sqrt{9+2x}}{3}\big)+C](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?2%5e%7b\sqrt%7b9+2x%7d%7d+3\tan%5e%7b-1%7d\big(\frac%7b\sqrt%7b9+2x%7d%7d%7b3%7d\big)+C) |  |
|  | b. [2^{\sqrt{9+2x}}-3\ln\frac{\sqrt{9+2x}-3}{\sqrt{9+2x}+3}+C](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?2%5e%7b\sqrt%7b9+2x%7d%7d-3\ln\frac%7b\sqrt%7b9+2x%7d-3%7d%7b\sqrt%7b9+2x%7d+3%7d+C) |  |
|  | c. [2^{\sqrt{9+2x}}+3\ln\frac{\sqrt{9+2x}-3}{\sqrt{9+2x}+3}+C](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?2%5e%7b\sqrt%7b9+2x%7d%7d+3\ln\frac%7b\sqrt%7b9+2x%7d-3%7d%7b\sqrt%7b9+2x%7d+3%7d+C) |  |
|  | d. [2^{\sqrt{9+2x}}+C](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?2%5e%7b\sqrt%7b9+2x%7d%7d+C) |  |

