

92
excellent!
11

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Choose T (true) or F (false) for each statement.

12

1. The integral of $\int (8x+4)(x^2+x)^3 dx$ is $\frac{1}{4}(x^2+x)^4 + C$
 $du = 2x + 1$

F T

2. The integral of $\int 4x\sqrt{2x-3} dx$ is $(2x-3)^{\frac{5}{2}} + (2x-3)^{\frac{3}{2}} + C$
 $\frac{du}{2} = dx$ $u = 2x-3$
 $x = \frac{u+3}{2}$

F T

3. The partial fraction decomposition of the integral $\int \frac{x^2+4}{3x^3+4x^2-4x} dx$ is $\frac{A}{x} + \frac{B}{(3x-2)} + \frac{C}{(x+2)}$

F T

4. The integral of $\int \frac{x^2+26x+12}{5x^3+3x^2} dx$ is $-\frac{9}{5}\ln|5x+3| + 2\ln|x| - \frac{4}{x} + C$
 $x^2(5x+3)$

F T

5. Solve the following integral, SHOW THE STEPS OF YOUR PROCEDURE.

$\int \frac{2x^3 - 4x^2 - 15x + 5}{x^2 - 2x - 8} dx$ $\int \frac{3x^3 - 23x^2 - 2x + 112}{x^2 - 5x - 14} dx$

$\frac{A}{x-4} + \frac{B}{x+2} = A(x+2) + B(x-4) = 2x^3 - 4x^2 - 15x + 5$
 $A(-2+2) + B(-2-4) = 2(-2)^3 - 4(-2)^2 - 15(-2) + 5$

$B(-6) = -16 - 16 + 30 + 5$
 $B(-6) = 3$ $B = -\frac{1}{2}$

20

$\int \left(\frac{\frac{3}{2}}{x-4} + \left(\frac{-\frac{1}{2}}{x+2} \right) \right) dx$

$A(4+2) + B(4-4) = 2(4)^3 - 4(4)^2 - 15(4) + 5$
 $A(6) = 128 - 64 - 60 + 5$
 $A(6) = 9$

$A = \frac{3}{2}$ $A = \frac{3}{2} x^2 + \frac{3}{2} \ln|x-4| - \frac{1}{2} \ln|x+2| + C$

$\frac{2x}{x^2-2x+8} = \frac{2x}{2x^3-4x^2+16x} = \frac{x}{2x^2+4x^2+16x} = \frac{x}{x+5}$

$du = 1$

$\int \frac{2x}{x+5} = 2x \ln|x+5| + C$

$\frac{3x^2}{2} + \frac{3}{2} \ln|x-4| - \frac{1}{2} \ln|x+2| + C$

$\int 4 \left(\frac{u+3}{2} \right) \sqrt{u} \frac{du}{2} = \int (2u+6)(u)^{1/2} \frac{du}{2} = \frac{1}{2} \int 2u^{3/2} + 6u^{1/2} du$

$\frac{4u^{3/2}}{5} + \frac{A}{x} + \frac{B}{x^2} + \frac{C}{5x+3} + |5x+3|$

$du = dx$
 $u = x+5$

$A(x^2)(5x+3) + B(x)(5x+3) + C(x)(x^2) = x^2 + 26x + 12$
 $A(-3/5)(-3/5)^2 = -3/5^2 + 26 = 3/5 + 12$