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6A

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

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

F  T

36

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

$\int 4(\frac{u+1}{2}) \sqrt{\frac{u}{2}} \frac{du}{2}$

F  T

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

$\frac{x^2+4}{(3x-2)(x+2)}$

F  T

4. The integral of  $\int \frac{x^2+26x+12}{5x^3+3x^2} dx$  is  $-\frac{9}{5}\ln|5x+3| + 2\ln|x| - \frac{1}{x} + C$

F  T

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

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

$\int \frac{x^2 + 26x + 12}{5x^3 + 3x^2} dx$

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$\frac{1}{2} \int (2u+6)(x^{\frac{1}{2}})^{x-2} dx = 2x^3 - 4x^2 - 15x + 5$

$= \frac{1}{2} \int 2u^{\frac{3}{2}} + 6u^{\frac{1}{2}}$

$= \frac{1}{2} \left[ \frac{4(2x-3)^{\frac{5}{2}}}{\frac{5}{2}} + \frac{4(2x-3)^{\frac{3}{2}}}{\frac{3}{2}} \right]$

$= \frac{1}{2} \left[ \frac{4(2x-3)^{\frac{5}{2}}}{5} + 4(2x-3)^{\frac{3}{2}} \right] + C$

$= \frac{2(2x-3)^{\frac{5}{2}}}{5} + 2(2x-3)^{\frac{3}{2}} + C$

$\left\{ \frac{A}{5x+3} + \frac{B}{x^2} + \frac{C}{x} \right.$

$= A(x^2)(x) + B(5x+3)(x) + C(x^2)(5x+3)$

$= A(x^2)(x) = x^2 + 26x + 12$

$A = \left(-\frac{9}{25}\right) \left(\frac{5}{5}\right)$

$\frac{27}{125} \neq \frac{9}{25} + \frac{38}{5} + 12$

$A = -3.024$

$A = 15$

$\sqrt{2}$