Calculus Worksheet #4 Unit 3 Selected Solutions

Integrate each of the following.

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

7. $\int \sqrt[3]{x}\,dx = \int x^{\frac{1}{3}}\,dx = \frac{3}{4}x^{\frac{4}{3}} + C$

10. $\int (x+2)^3 dx = \int (x^3 + 6x^2 + 12x + 8)\,dx = \frac{1}{4}x^4 + 2x^3 + 6x^2 + 8x + C$

Evaluate each of the following. Show all of your work neatly organized.

11. $\int_2^5 x^2 dx = \frac{1}{3}x^3\Big|_2^5 = \frac{1}{3}\cdot 5^3 - \frac{1}{3}\cdot 2^3 = \frac{125}{3} - \frac{8}{3} = 39$

15. $\int_1^3 (x^2 - 4x + 1)\,dx = \left(\frac{1}{3}x^3 - 2x^2 + x\right)\Big|_1^3 = (9 - 18 + 3) - \left(\frac{1}{3} - 2 + 1\right) = -6 - \frac{-2}{3} = \frac{-16}{3}$