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HW 8B: Problem 1

Part A: Analytic Integral

$$y = 3 \int_2^5 x^2 \exp(0.2x)$$

$$u = x^2$$

$$du = 2x dx$$

$$dv = e^{(x/5)}$$

$$v = 5e^{(x/5)}$$

$$15x^2 e^{0.2x} \Big|_2^5 - 30 \int_2^5 e^{0.2x} x dx$$

$$-60e^{0.4x} \Big|_2^5 + 375e + (-150xe^{(0.2x)}) \Big|_2^5 + 150 \int_2^5 e^{0.2x} x dx$$

$$150 \int_2^5 e^{x/5} dx + 240e^{2/5} - 375e$$

$$750(e - e^{2/5}) + 240e^{2/5} - 375e = 258.525$$

Part B: Computational Integral

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fun = @(x) 3*x.^2 .* exp(0.2*x);  
y = integral(fun,2,5)
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```
y = 258.5251
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