

Key
4 pts each

Elements of Calculus I, MATH 180 Quiz 12
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(1) Evaluate the following:

$$(a) \int_0^2 6x^2 + 4x + 5 dx = 2x^3 + 2x^2 + 5x \Big|_0^2 = 16 + 8 + 10 - 0 = 34$$

$$(b) \int_1^{e^2} \frac{2}{x} dx = 2 \ln|x| \Big|_1^{e^2} = 2 \ln e^2 - 2 \ln 1 = 2 \ln e^2 \text{ or } 4$$

$$\int_0^{\ln 3} 2e^x dx = 2e^x \Big|_0^{\ln 3} = 2e^{\ln 3} - 2e^0 = 2e^{\ln 3} - 2 \text{ or } 6 - 2 = 4$$

(2) Determine the area under $f(x) = \frac{1}{x^2} - 18x$ on the interval $[-1, -\frac{1}{3}]$.

$$A = \int_{-1}^{-1/3} \left(\frac{1}{x^2} - 18x \right) dx = \left(-\frac{1}{x} - 9x^2 \right) \Big|_{-1}^{-1/3} = \left(-\frac{1}{-1/3} - 9\left(-\frac{1}{3}\right)^2 \right) - \left(-\frac{1}{-1} - 9(-1)^2 \right) = 3 - 1 + 1 + 9 = 10$$