Homework 5.6 – Definite Integrals of Exponentials and Logarithms

1. **(1 pt) alfredLibrary/AUCI/chapter5/lesson6/areaapproximation1pet.pg**
Suppose we want to estimate $\int_{-1}^{-0.2}(3x^2-12)dx$ using $n=4$ subintervals of equal width.

(a) The width of each subinterval is $\Delta x =$ _____.

(b) The left-hand approximation is _____.

(c) The right-hand approximation is _____.

(d) The midpoint approximation is _____.

(e) Now find the exact value of the integral using the Fundamental Theorem, and compare your answer with the approximations in parts (b) through (d):

$\int_{-1}^{-0.2}(3x^2-12)dx =$ _____

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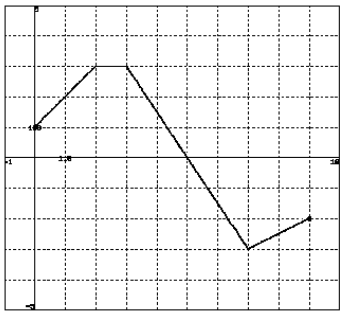
2. **(1 pt) alfredLibrary/AUCI/chapter5/lesson6/definiteintegral1pet.pg**
The purpose of this exercise is to help you remember the meaning of the definite integral. You need only compute areas of rectangles and triangles.

The graph of f is shown below. Evaluate each integral by interpreting it in terms of net area. Click on the graph to enlarge the image.



(a) $\int_0^2 f(x)\,dx =$ _____

(b) $\int_0^5 f(x)\,dx =$ _____

(c) $\int_5^7 f(x)\,dx =$ _____

(d) $\int_0^9 f(x)\,dx =$ _____

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3. **(1 pt) alfredLibrary/AUCI/chapter5/lesson6/definiteintegral11pet.pg**
Use the Fundamental Theorem to evaluate each integral.

(a) $\int_{-1}^{2} e^{3.1x}\,dx =$ _____

(b) $\int_0^1 8^x\,dx =$ _____