

Review Problems for final exam

Note:

1. The material covered in this set of problems doesn't contain the material for the first and the second exam. You should look for the sets of problems and the streaming power points for the first and the second exams.
2. These problems are an addition to the homework problems.
3. You can watch the solutions on the posted streaming power points.

1. A continuous function $f(x)$ is such that $\int_0^3 f(x)dx = -4$ and $\int_5^0 f(x)dx = -10$.

Find $\int_3^5 f(x)dx$.

2. Find

(a) $\int x^2 e^{x^3+4} dx$ (b) $\int \sin x \cos x dx$ (c) $\int \frac{1}{4-x} dx$ (d) $\int \frac{t^2}{t-1} dt$

3. Evaluate

(a) $\int_1^4 \frac{1-x}{\sqrt{x}} dx$ (b) $\int_0^{\ln 2} \frac{e^x}{e^x+2} dx$ (c) $\int_1^2 \sqrt{x}(x^3 - \sqrt{x} + \frac{5}{\sqrt{x}}) dx$

4. Approximate the area under the curve $y = x^2 + 2x - 1$, above the x -axis and between $x = 1$ and $x = 4$ using a Riemann sum with $n = 3$ and left hand endpoint of each of the subintervals.

5. Let $f(x) = \int_5^x t^3 \sin(e^t) dt$. (a) Find $\frac{d}{dx} f(x)$. (b) Evaluate $f(5)$.

6. A farmer can get \$3 per bushel of apples on September 15th. If he sells after that the price drops 10 cents per bushel per day. On September 15th, the farmer has 200 bushels of apples on the trees and the crop is increasing at a rate of 2 bushels per day. When should the farmer pick the apples to maximize revenue?