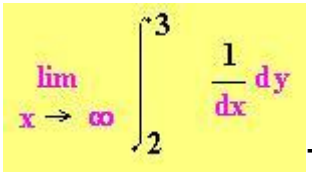

THE EVALUATION OF DEFINITE INTEGRALS

Problem 1:

Evaluate $\int_0^1 (4x^2 - 8x + 1)\,dx$.

Problem 2:

Evaluate $\int_1^2 \left(x - \frac{1}{x}\right)^2 dx$.

Problem 3:

Evaluate $\int_0^{\pi/6} \frac{1}{4\sec x}\,dx$.

Problem 4:

Evaluate $\int_{\pi/4}^{\pi/2} \frac{1}{\sin^2 x}\,dx$.

Problem 5:

Evaluate $\int_0^{\pi} 4\cos 4x\,dx$

Problem 6:

Evaluate $\int_{-\pi/4}^{\pi/6} 7\sec 8x \tan 8x\,dx$

Problem 7:

Evaluate $\int_{-1}^{2} 4x(2x^2 + 3)^2\,dx$

Problem 8:

Evaluate $\int_{-\sqrt{8}}^{-\sqrt{5}} \frac{v}{\sqrt{9 - v^2}}\,dv$

Problem 9:

(a) Use the definite integral to find the area bounded by $y = 2x$, the x-axis, and the vertical lines $x = -2$ and $x = 3$.

(b) Evaluate $\int_{-2}^{3} 2x\,dx$

Problem 10:

(a) Use the definite integral to find the area bounded by $f(x) = 4x - x^2$, the x-axis, and the vertical lines $x = 0$ and $x = 4$.

(b) Evaluate $\int_{0}^{4} (4x - x^2)\,dx$

Problem 11:

(a) Use the definite integral to find the area bounded by $y = \cos x$, the x-axis, and the vertical lines $x = 0$ and $x = \pi$.

(b) Evaluate $\int_{0}^{\pi} \cos x\,dx$

Problem 12:

Approximate the value of $\int_{1}^{1.1} \sin x^2\,dx$ using the *Trapezoidal Rule* and *Simpson's Rule* with $n = 4$.

SOLUTIONS

You can find detailed solutions below the link for this problem set!

1. $-\frac{5}{3}$	2. $\frac{5}{6}$	3. $\frac{1}{8}$
4. 1	5. 0	6. $-\frac{21}{8}$
7. 402	8. -1	9.a. 13 9.b. 5
10.a. $\frac{32}{3}$ 10.b. $\frac{32}{3}$	11.a. 2 11.b. 0	12. Trapezoidal Rule 0.08910 Simpson's Rule 0.08911