

Lesson #53

Lesson # 53: Evaluating Definite Integrals by Substitution

Example #1:

$$\int_1^2 (4x - 2)^3 dx$$

$$\int_1^2 (4x - 2)^3 dx$$

Example #2:

$$\int_{-5}^0 x\sqrt{4-x} dx$$

Lesson #53

Example #3:

$$\int_0^{\frac{\pi}{4}} \tan^2 x \sec^2 x \, dx$$

Extra Practice Questions for Unit 5

1. A particle is moving along a line for $t \geq 0$, so that $a(t) = 4t + 3$. When $t=2$, $v(t)=16$ and $x(t)=-9$.
- a) Write an expression for velocity, $v(t)$, for any time t .

b) Write an expression for position, $x(t)$, for any time t .

Lesson #53

2. $f(x) = ax^3 + bx + c$. $f(x)$ has a relative minimum at $(1,-2)$. $f(x)$ has a point of inflection at $(0,1)$. Find function $f(x)$ with values for a , b , and c substituted in.