

① Find the average value of the function $f(x) = 2x^3 + 4x$ over the interval $[-2, 1]$

② Integrate using a "u-substitution"

a) $\int \sin(3x) dx$

b) $\int (4x-5)^3 dx$

c) $\int_1^5 2x^2 \sqrt{5x^3-10} dx$

③ Use the 2nd Fundamental Theorem of Calculus:

a) $\frac{d}{dx} \int_0^x 2y^5 dy$

b) $\frac{d}{dx} \int_x^0 \frac{5t^2}{\cos t} dt$

④ Finding the area between 2 curves:

Example 1:

2 functions

$$f(x) = x^2 + 3$$

$$g(x) = x + 1$$

Find the area between these 2 curves over the interval $[0, 3]$