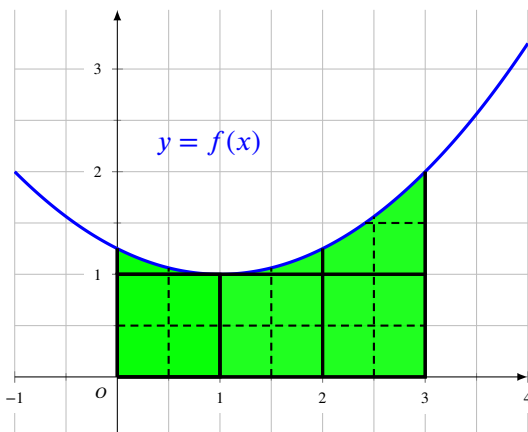


INTEGRATION BY PARTS

January 28th, 2019

Parts from a graph



Estimate:

- ① $\int_0^1 f(x) dx$
- ② $\int_0^1 f'(x) dx$
- ③ $\int_0^3 x f'(x) dx$

For next lecture

For Wednesday (Jan 30), watch the videos:

- Integration of trig functions: 9.10, (9.11), (9.12)
- Integration of rational functions: 9.15, (9.16), (9.17)

Computation practice: Integration by parts

Compute:

- ① $\int x e^{-2x} dx$
- ② $\int x^2 \sin x dx$
- ③ $\int \ln x dx$
- ④ $\int x \arctan x dx$
- ⑤ $\int \sin \sqrt{x} dx$

Compute

$$\int e^{ax} \sin(bx) dx$$

The following function is tabulated.

$$E(x) = \int_0^x e^{-t^2} dt.$$

Write the following quantities in terms of E :

$$\textcircled{1} \int_1^2 e^{-t^2} dt$$

$$\textcircled{4} \int_0^1 e^{-t^2+6t} dt$$

$$\textcircled{2} \int_0^x t^2 e^{-t^2} dt$$

$$\textcircled{5} \int_{x_1}^{x_2} e^{-\frac{(t-\mu)^2}{\sigma^2}} dt$$

$$\textcircled{3} \int_0^x e^{-2t^2} dt$$

$$\textcircled{6} \int_0^x \frac{e^{-t}}{\sqrt{t}} dt$$