

Homework 1 — MATH 1586 Spring 2018

Recall that for $n \neq -1$,

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C.$$

Recall that

$$\int \frac{1}{x} dx = \ln(x) + C.$$

Recall that

$$\int e^x dx = e^x + C.$$

Recall that

$$\int f(x) + g(x) dx = \int f(x) dx + \int g(x) dx.$$

Finally recall that if F represents any antiderivative of f , then

$$\int_a^b f(x) dx = F(b) - F(a).$$

Compute the following definite and indefinite integrals.

1. $\int x^{17} dx$
2. $\int x^3 + 3x^2 + \frac{x}{9} + 1 dx$
3. $\int \frac{e^x}{10} + x^2 + \frac{9}{x} + 1 dx$
4. $\int_0^1 4x^4 + 3x^2 + 1 dx$
5. $\int_{-3}^4 -3e^x + \frac{1}{x} + x^5 - 2x^2 dx$
6. Is it accurate to say that $\int e^{7x} dx = e^{7x} + C$? How can you use differentiation to check if this is an accurate statement?