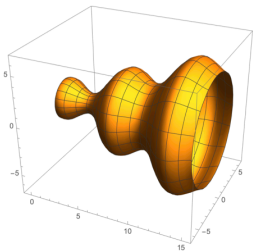
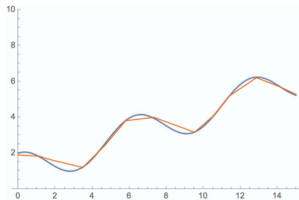
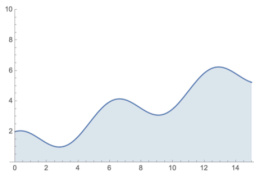


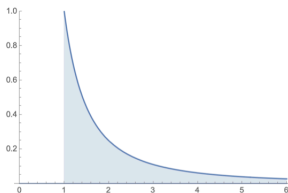
What is Calc II all about? Part 1: Applications of the Integral

Anything you can approximate by accumulation, you can calculate by an integral



What is Calc II all about? Part 2: Infinite series

“Infinite” integrals and sums are really powerful tools!

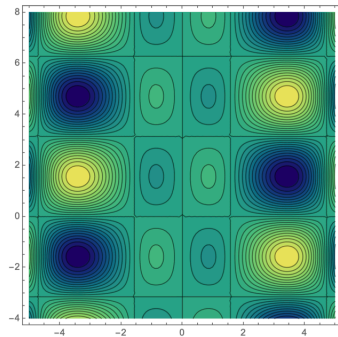
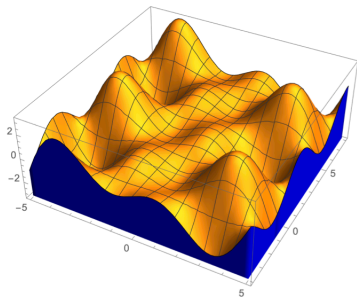


$$\sum_{k=0}^{\infty} \frac{1}{2^k} = 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots$$

$$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$$

What is Calc II all about? Part 3: Functions of two variables

We live in a multivariable world



Find the derivative of each function

1. Find the derivative of each function

(a) $f(x) = x^3 + 7x + 1$

(c) $f(x) = \sqrt{x + e^x}$

(b) $f(x) = \sin(x^2)$

(d) $f(x) = (3x^2 + 7x) \ln(x)$

2. Evaluate the following integrals

(a) $\int 5x^4 - x^3 + \pi \, dx$

(c) $\int e^x + \frac{1}{x} \, dx$

(b) $\int_0^{\pi/2} -\sin(2x) \, dx$

(d) $\int \sec(2x)^2 \, dx$