Lecture 4, Sep 15, 2022

Double Integrals in Polar Coordinates

> **Important**
>
> Given a region $R = \{\,(r, \theta) \mid a \le r \le b, \alpha \le \theta \le \beta\,\}$ and $f(x, y)$, then:
>
> $$\iint_R f(x, y)\, \mathrm{d}A = \int_\alpha^\beta \int_a^b f(r\cos\theta, r\sin\theta)r\, \mathrm{d}r\, \mathrm{d}\theta$$

- With more complicated regions, the bounds may be functions of r or θ