

Often we want to determine whether an integral converges/diverges without necessarily caring what converges or diverges to.

If an integral converges (or is a proper integral) on some interval, it is also convergent (or proper) over any sub interval.

$$\int_1^{\infty} \frac{1}{x^3} dx \text{ converges}$$

$$\int_5^{\infty} \frac{1}{x^3} dx \text{ also converges}$$