

# Part A

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## *Hyperarithmetical Sets*

Hyperarithmetical theory is the first step beyond classical recursion theory. It is the primary source of ideas and examples in higher recursion theory. It is also a crossroads for several areas of mathematical logic. In set theory it is an initial segment of Gödel's  $L$ . In model theory, the least admissible set after  $\omega$ . In descriptive set theory, the setting for effective arguments, many of which are developed below. It gives rise directly to metarecursion theory (Part B), and yields the simplest example of both  $\alpha$ -recursion theory (Part C) and  $E$ -recursion theory (Part D).