§10 Metric spaces [OMR]

§10.a Definitions

[2CC]

§10.b Topology in metric spaces

[2C2]

§10.c Quotients

[2C3]

§10.d Distance function

[2C4]

§10.e Connected set

[2C5]

§10.f Topology in the real line

[2C6]

§10.g Topology in Euclidean spaces

[2C7]

§10.h Fixed points

[2C8]

§10.i Isometries

[2C9]

§10.j Compactness

[2CB]

§10.k Baire's Theorem and categories

The following is *Baire's category theorem*; there are several equivalent statements.

Theorem 10.k.1. *[OVV]*

Definition 10.k.2. *[OVW]*

Exercises

E10.k.3 [OVX]

E10.k.4 [OVZ]

E10.k.5 [OW1]

E10.k.6 [OW3]

The Cantor set is a perfect set, see [O9S].

§10.l Infinite product of metric spaces

Exercises

E10.l.1 [OW9]

E10.l.2 [OWB]

E10.l.3 [OWC]

E10.l.4 [OWD]

E10.l.5 [OWG]

E10.l.6 [OWJ]

§10.m Ultrametric

[[OWK]]

Definition 10.m.1. *[OWM]*

Exercises

E10.m.2 [OWN]

E10.m.3 [OWP]

E10.m.4 [OWR]

E10.m.5 [OWT]

E10.m.6 [OWW]

E10.m.7 [OWY]

[[OWZ]]

§10.m.a Ultrametric space of sequences

Let's build this example of *ultrametric* on the space of sequences.

Definition 10.m.8. *[OXO]*

Remark 10.m.9. *[OX1]*

Exercises

E10.m.10 [0X2]

E10.m.11 [0X4]

E10.m.12 [0X6]

E10.m.13 [0X8]

E10.m.14 [0XC]

See also [0ZP].

§10.n P-adic ultrametric

[2CG]

§10.o Circle

[2CF]