

TOPOLOGY, JAN-APR 2018: PROBLEM SETS

MANOJ KUMMINI

1. FOR THE QUIZ ON 2019-01-31

- 1.1. Section 12: Examples
- 1.2. Section 13: Examples and all the exercises (In 7, exclude T_2) .
- 1.3. Let m be an integer and X a set with at least $m + 1$ elements. Show that

$$\{U \subseteq X \mid m \leq |X \setminus U| < \infty\}$$

is a basis for the cofinite topology on X .

- 1.4. Let M be a positive integer. Show that the set

$$\{B_{x, \frac{1}{n}} \mid x \in \mathbb{R}^2, n \in \mathbb{Z}, n \geq M\}$$

is a basis for the euclidean topology on \mathbb{R}^2 .

- 1.5. Section 16: Exercises 1–4, 6–10.
- 1.6. Section 17: Examples and the following exercises: 2, 4, 6,7,8,14, 16(a) (skip T_2), 17, 19, 20
- 1.7. Section 18: Examples and the following exercises: 1–8, 9(a), (b), 10–13.
- 1.8. Section 19: 4, 6, 7, 10.
- 1.9. Section 20: 1, 3, 4, 5,
- 1.10. Section 21: 1, 3, 5.

2. FOR THE QUIZ ON 2019-03-26

- 2.1. Section 23: examples and the following exercises: 1–10.
- 2.2. Section 24: examples and the following exercises: 1, 8.
- 2.3. Section 26: Exercises 1, 2, 3.
- 2.4. Section 27: Exercises 2a–e.
- 2.5. Section 31: Exercises 1–7.
- 2.6. Section 32: Exercises 1, 2, 6.
- 2.7. Section 33: Exercise 1, 3, 8.
- 2.8. Section 37: Exercise 1.

3. MORE PROBLEMS

- 3.1. Section 51: 2, 3
- 3.2. Section 52: 1–5
- 3.3. Section 53: Exer 1–4, 6.
- 3.4. Section 54: 3, 8.
- 3.5. Section 55: 1–4.

3.6. Section 56: 1.

CHENNAI MATHEMATICAL INSTITUTE, SIRUSERI, TAMILNADU 603103. INDIA
E-mail address: mkummini@cmi.ac.in