Lower and Upper Probability of Sets Semi Open and Semi Closed

Research Submitted to University of Babylon / College of Education for Pure Sciences / Mathematic Department as Part of the Requirements for The Degree of B.Sc. in Mathematical Science

By

Eman Adnan Ali

Supervised By

Prof . Mustafa Hasan Hadi

1444A.H   2023 A.D

بِسْمِ اللهِ الرَّحْمَنِ الرَّحِيمِ

﴿فَلَا تَعْلَمُ نَفْسٌ مَّا أُخْفِيَ لَهُم مِّن قُرَّةِ أَعْيُنٍ جَزَاءً بِمَا كَانُوا يَعْمَلُونَ﴾

صَدَقَ اللهُ الْعَلِيُّ الْعَظِيمِ

السجدة ، اية ١٧

إهداء

الى خالق اللوح والقلم وبارئ الذر والنسم وخالق كل شيئ من العدم الى القاف والنون وكان خير الرسل وما كادوا ليزلقوه بأبصارهم إلا هو ذكر للعالمين . .

نبي الرحمة

الى ترجمة وحي الله ومهبط سره الى السادات الاطهار وعروته الوثقى . .

اهل بيت النبوه

الى مراد قلبي . . الأقرب لي من نفسي المغيب عن الأبصار والكامن بعين البصيرة

كلماتي المستطرة ترجمان عنائي للوصول إليك بزادي العلمي . .

صاحب العصر والزمان

لعلي أفي في تلك الأبوه حقها ، وإن كان لا يوفى بكيل ولا وزن ، فأعظم مجد انك لي أب . .

ابي الحبيب

الى وطني الاول ومدرستي الاولى . . الى تلك الحبيبة ذات القلب النقي والنظرة الدافئة الى من تفتش سعادتها في سعادتي

امي الحبيبه

الى من اشاركهم لحظاتي . . الى من يفرحون لنجاحي وكانه نجاحهم . .

اخوتي

الى شهداء العراق الابرار . . .

إليكم كل هذا الحب والعرفان بالجميل

iv

Contenes

Abstract

in this chapter, we will present a set of basic definitions on which we base our solution to a set of examples that we worked on through three elements : [a, b, c] and we made topologies 29 tabloids and extracted lnterior and closures in addition to mentioning the definition of Semi-open and extracted Interior and closures for Semi-open At the end of the research, we studied the probabilities that are the upper and lover on the tops that we knew, in addition to the probabilities on the tops for Semi-open .

Introduction [1]

Topology is an important and interesting branch of mathematics. Studying it not only introduces you to new concepts and theories, but also puts you in the context of old concepts such as related functions. On the other hand, the importance of topology can be seen through its clear influence on almost all other branches of mathematics. This makes the study of topology relevant to all who aspire to become mathematicians, whether their first love is (or becomes) algebra, analysis, classification theory, quantum mechanics, dynamics, engineering, industrial mathematics, mathematical biology, mathematical economics, mathematical finance, mathematical presentation, mathematical physics, communication mathematics, number theory, numerical mathematics, operations research or statistics (The main bibliography at the end of this book suffices to show that topology is indeed closely related to all of these topics and more). Topological concepts such as compactness, coherence, and density are as essential to mathematicians today as groups and functions were to mathematicians of the last century.

Topology has several different branches - general topology (also known as point-group topology), algebraic topology, differential topology and topological algebra-first, general topology is the door to the study of the other. I hope in this book to present a complete ground in general topology. Anyone who studies the first ten chapters well and solves at least half of the exercises will definitely get on this floor.

Chapter One : Topologies on The Sets Containing Three Elements

Topologies on The Sets Containing Three Elements In this chapter, we will show set of basic definitions on which our solutions are based, to a set of questions that we worked on through three elements, which are {a,b,c}, where we made 29 topologies and extracted (interiors and closures) of Sets -open at the end of the research ,we studied the probabilities that are (upper and lower) on the topologies that we knew, in addition to the probabilities on topologies for the(semi –open) set.

Definition 1.1 [2]

Let τ be a collections of sabset of a set X. Then τ is said to be topology on X iff :

(1) $\emptyset , X \in \tau$

(2) $IF\ A, B \in \tau\ then\ A \cap B \in \tau$

(3) $IF\ T_1, T_2, \dots, \in \tau\ then\ \cup_{i \in I} T_i \in \tau\ a\ pair\ (X, \tau)\ is\ said\ to$

$be\ topological\ space\ and\ any\ member\ of\ \tau\ is\ said\ to\ be\ open\ set$

$If\ T \subseteq X\ and\ A \in \tau\ then\ T\ is\ said\ to\ be\ open\ set.$

Definition 1.2 [3]

The subset of X is colled set in the space x if its complement X/A is open set we will denofed the family of closed sets

if $A \subseteq X$ and $A \in F$ then A closed set

Definition 1.3 [2]

Let X be a space and A $\subseteq$ X . The set $A = \cap \{F | F\ is\ closed\ in\ X\ and\ A \subset F)$ is the smallest closed set containing A. This is called the closure of A, sometimes denoted by cl (A) .

Definition 1.4 [2]

Let (X, τ) be a topological space and $A \subseteq X$. T point $x \in A$ is called an interior point of A iff there exists an open set $U \in \tau$ containing x such that $x \in U \subseteq A$. The set of all interior points of A is called the interior of A and is denoted by A° or Int (A) . i.e. ,

$$A° = \{x \in A : \exists\, U \in \tau\, ; x \in U \subseteq A\}$$

$$x \in A° \Leftrightarrow \exists\, U \in \tau\, ; x \in U \subseteq A$$

.

Definition 1.5 [2]

A subset T of a space X is said to be Semi-open if $T \subseteq cl\big(int\,(T)\big)$. And the complement Semi-open is called Semi-closed set. And complement $T \subseteq cl\big(int\,(T)\big)$.

Definition 1.6 [3]

Let (X, τ) be a topological space and let $A \subseteq X$. $A\ point\ x \in A$ is cald an semi interior point of A iff there exists an a - open set $semi - open\ set\ U \in \tau$ containing such that $x \in U \subseteq A$ .The set of all semi - int int of A is called the interior of A and is denoted by $semi -\ ° or\ semi - Int(A)\ i.e$

$$A° = \{x \in A : \exists U \in \tau \subseteq A\}$$

$$x \in A° \longleftrightarrow \exists U \in \tau; x \in U \subseteq A$$

Definition 1.7 [3]

Let (X, τ) be a topological space and let A be a subset of X . Then the intersection of all semi - closed containing the set A is called the semi closure of A and denoted by semi - $\overline{A}$ or (A) or semi - Cl (A) . i.e Cl (A) $= \cap \{F : F\ is\ closed\ , A \subseteq F\}$

Definition 1.8 [3]

1) $\underline{\rho}(A) = \underline{\rho}\big(In(A)\big) = \dfrac{number\ element\ of\ A^{\circ}}{number\ element\ of\ X}$

2) $\overline{\rho}(A) = \overline{\rho}\big(cl(A)\big) = \dfrac{number\ element\ of\ \overline{A}}{number\ element\ of\ X}$

3) $\underline{\rho}\big(semi\ (A^{\circ})\big) = \dfrac{number\ element\ of\ semi-int(A)}{number\ element\ of\ X}$

4) $\overline{\rho}(A) = \overline{\rho}\big(semi(\overline{A})\big) = \dfrac{number\ element\ of\ semi-cl(A)}{number\ element\ of\ X}$

$T_1 = \{\emptyset, X\}$

$T_1^c = \{X, \emptyset\}$

$semi . T_1 = \{X, \emptyset\}$

$semi. T_1^c = \{\emptyset, X\}$

T_1	$\{a\}$	$\{b\}$	$\{c\}$	$\{a,b\}$	$\{a,c\}$	$\{b,c\}$
$\underline{\rho}(A^\circ)$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$
$\overline{\rho}(\overline{A})$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$
$\underline{\rho}\left(semi\ (A^\circ)\right)$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$
$\overline{\rho}\left(semi\ (\overline{A})\right)$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$

$T_2 = \{\emptyset, X, \{a\}\}$

$T_2^c = \{\emptyset, X, \{b, c\}\}$

$semi . T_2 = \{X, \emptyset\}$

$semi . T_2^c = \{\emptyset, X\}$

T_2	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$
$\underline{\rho}\left(semi\ (A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\ (\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_3 = \{\emptyset, X, \{b\}\}$

$T_3^c = \{X, \emptyset, \{a, c\}\}$

$semi . T_3 = \{X, \emptyset\}$

$semi . T_3^c = \{\emptyset, X\}$

T_3	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_4 = \{\emptyset, X, \{c\}\}$

$T_4^c = \{X, \emptyset, \{a, b\}\}$

$semi . T_4 = \{X, \emptyset\}$

$semi . T_4^c = \{\emptyset, X\}$

T_4	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$$T_5 = \{\emptyset, X, \{a\}, \{a, b\}\}$$

$$T_5^c = \{X, \emptyset, \{b, c\}, \{c\}\}$$

$$semi . T_5 = \{X, \emptyset\}$$

$$semi . T_5^c = \{\emptyset, X\}$$

T_5	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$
$\underline{\rho}\left(semi\ (A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\ (\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$$T_6 = \{\emptyset, X, \{a\}, \{a, c\}\}$$

$$T_6^c = \{X, \emptyset, \{b, c\}, \{b\}\}$$

$$semi . T_6 = \{X, \emptyset\}$$

$$semi . T_6^c = \{\emptyset, X\}$$

T_6	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{0}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{3}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$
$\underline{\rho}\left(semi\ (A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\ (\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$$T_7 = \{X, \emptyset, \{a\}, \{a, b\}, \{a, c\}\}$$

$$T_7^c = \{\emptyset, X, \{b, c\}, \{c\}, \{b\}\}$$

$$semi . T_7 = \{\emptyset, X\}$$

$$semi . T_7^c = \{X, \emptyset\}$$

T_7	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{0}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{3}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_8 = \{X, \emptyset, \{b\}, \{a, b\}\}$

$T_8^c = \{\emptyset, X, \{a, c\}, \{c\}, \}$

$semi \cdot T_8 = \{\emptyset, X\}$

$semi \cdot T_8^c = \{X, \emptyset\}$

T_8	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\ (A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\ (\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_9 = \{X, \emptyset, \{b\}, \{b, c\}\}$

$T_9^c = \{\emptyset, X, \{a, c\}, \{a\}, \}$

$semi . T_9 = \{\emptyset, X\}$

$semi . T_9^c = \{X, \emptyset\}$

T_9	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_{10} = \{X, \emptyset, \{b\}, \{a, b\}, \{b, c\}\}$

$T_{10}^c = \{\emptyset, X, \{a, c\}, \{c\}, \{a\}\}$

$semi \, . \, T_{10} = \{\emptyset, X\}$

$semi \, . \, T_{10}^c = \{X, \emptyset\}$

T_{10}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_{11} = \{X, \emptyset, \{c\}, \{a, c\}\}$

$T_{11}^c = \{\emptyset, X, \{a, b\}, \{b\},\}$

$semi . T_{11} = \{\emptyset, X\}$

$semi . T_{11}^c = \{X, \emptyset\}$

T_{11}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(sime\ (A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(sime\ (\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$$T_{12} = \{X, \emptyset, \{c\}, \{b, c\}\}$$

$$T_{12}^c = \{\emptyset, X, \{a, b\}, \{a\}\}$$

$$semi.T_{12} = \{\emptyset, X\}$$

$$semi.T_{12}^c = \{X, \emptyset\}$$

T_{12}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(sime\,(A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(sime\,(\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_{13} = \{X, \emptyset, \{c\}, \{a,c\}, \{b,c\}\}$

$T_{13}^c = \{\emptyset, X, \{a,b\}, \{b\}, \{a\}\}$

$semi \,. T_{12} = \{\emptyset, X\}$

$semi \,. T_{13}^c = \{X, \emptyset\}$

T_{13}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a,b\}$	$\{a,c\}$	$\{b,c\}$
$\underline{\rho}(A^{\circ})$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\,(A^{\circ})\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_{14} = \{X, \emptyset, \{a, b\}\}$

$T_{14}^c = \{\emptyset, X, \{c\}\}$

$semi . T_{14} = \{\emptyset, X\}$

$semi . T_{14}^c = \{X, \emptyset\}$

T_{14}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{2}{3}$	$\frac{0}{3}$	$\frac{0}{3}$
$\overline{\rho}(\overline{A})$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{1}{3}$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$	$\frac{0}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$	$\frac{3}{3}$

$T_{15} = \{X, \emptyset, \{b, c\}\}$

$T_{15}^c = \{\emptyset, X, \{a\},\}$

$semi . T_{15} = \{\emptyset, X\}$

$semi . T_{15}^c = \{X, \emptyset\}$

T_{15}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\ (A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\ (\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_{16} = \{X, \emptyset, \{a, c\}\}$

$T_{16}^c = \{\emptyset, X, \{b\}\}$

$semi \, . \, T_{16} = \{\emptyset, X\}$

$semi \, . \, T_{16}^c = \{X, \emptyset\}$

T_{16}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$	$\dfrac{0}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{3}{3}$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_{17} = \{X, \emptyset, \{a\}, \{b\}, \{a, b\}\}$

$T_{17}^c = \{\emptyset, X, \{b, c\}, \{a, c\}, \{c\}\}$

$semi . T_{17}(X) = \{\emptyset, X, \{a\}, \{b\}\}$

$semi . T_{17}^c(X) = \{X, \emptyset, \{b, c\}, \{a, c\}\}$

T_{17}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$

$T_{18} = \{X, \emptyset, \{a\}, \{c\}, \{a, c\}\}$

$T_{18}^c = \{\emptyset, X, \{b, c\}, \{a, b\}, \{b\}\}$

$semi . T_{18} = \{\emptyset, X, \{a\}, \{c\}\}$

$semi . T_{18}^c = \{X, \emptyset, \{b, c\}, \{a, b\}\}$

T_{18}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$

$$T_{19} = \{X, \emptyset, \{b\}, \{c\}, \{b, c\}\}$$

$$T_{19}^c = \{\emptyset, X, \{a, c\}, \{a, b\}, \{a\}\}$$

$$semi . T_{19} = \{\emptyset, X, \{b\}, \{c\}\}$$

$$semi . T_{19}^c = \{X, \emptyset, \{a, c\}, \{a, b\}\}$$

T_{19}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$

$$T_{20} = \{X, \emptyset, \{a\}, \{b\}, \{a, b\}, \{b, c\}\}$$

$$T_{20}^c = \{\emptyset, X, \{b, c\}, \{a, c\}, \{c\}, \{a\}\}$$

$$semi \, . \, T_{20} = \{\emptyset, X, \{a\}, \{b, c\}\}$$

$$semi \, . \, T_{20}^c = \{X, \emptyset, \{b, c\}, \{a\}\}$$

T_{20}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$

$T_{21} = \{X, \emptyset, \{a\}, \{c\}, \{a, c\}, \{b, c\}\}$

$T_{21}^c = \{\emptyset, X, \{b, c\}, \{a, b\}, \{b\}, \{a\}\}$

$semi . T_{21} = \{\emptyset, X, \{a\}, \{b, c\}\}$

$semi . T_{21}^c = \{X, \emptyset, \{b, c\}, \{a\}\}$

T_{21}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$
$\underline{\rho}\left(semi\ (A^\circ)\right)$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$
$\overline{\rho}\left(semi\ (\overline{A})\right)$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$

$T_{22} = \{X, \emptyset, \{b\}, \{c\}, \{b, c\}, \{a, c\}\}$

$T_{22}^c = \{\emptyset, X, \{a, c\}, \{a, b\}, \{a\}, \{b\}\}$

$semi . T_{22} = \{\emptyset, X, \{b\}, \{a, c\}\}$

$semi . T_{22}^c = \{X, \emptyset, \{a, c\}, \{b\}\}$

T_{22}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\ (A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$
$\overline{\rho}\left(semi\ (\overline{A})\right)$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$

$T_{23} = \{X, \emptyset, \{a\}, \{b, c\}\}$

$T_{23}^{c} = \{\emptyset, X, \{b, c\}, \{a\}\}$

$semi . T_{23} = \{\emptyset, X, \{a\}, \{b, c\}\}$

$semi . T_{23}^{c} = \{X, \emptyset, \{b, c\}, \{a\}\}$

T_{23}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^{\circ})$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$
$\underline{\rho}\left(semi\ (A^{\circ})\right)$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$
$\overline{\rho}\left(semi\ (\overline{A})\right)$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$

$T_{24} = \{X, \emptyset, \{b\}, \{b, c\}\}$

$T_{24}^c = \{\emptyset, X, \{a, c\}, \{a\}\}$

$semi . T_{24} = \{\emptyset, X, \{b\}, \{b, c\}\}$

$semi . T_{24}^c = \{X, \emptyset, \{a, c\}, \{a\}\}$

T_{24}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\ (A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$
$\overline{\rho}\left(semi\ (\overline{A})\right)$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$

$T_{25} = \{X, \emptyset, \{c\}, \{a, c\}\}$

$T_{25}^c = \{\emptyset, X, \{a, b\}, \{b\}\}$

$semi \, . \, T_{25} = \{\emptyset, X\}$

$semi \, . \, T_{25}^c = \{X, \emptyset\}$

T_{25}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{0}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_{26} = \{X, \emptyset, \{a\}, \{b\}, \{a, b\}, \{a, c\}\}$

$T_{26}^c = \{\emptyset, X, \{b, c\}, \{a, c\}, \{c\}, \{b\}\}$

$semi \,.\, T_{26} = \{\emptyset, X, \{b\}, \{a, c\}\}$

$semi \,.\, T_{26}^c = \{X, \emptyset, \{a, c\}, \{b\}\}$

T_{26}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$

$T_{27} = \{X, \emptyset, \{a\}, \{c\}, \{a, c\}, \{a, b\}\}$

$T_{27}^c = \{\emptyset, X, \{b, c\}, \{a, b\}, \{b\}, \{c\}\}$

$semi \, . \, T_{27} = \{\emptyset, X, \{c\}, \{a, b\}\}$

$semi \, . \, T_{27}^c = \{X, \emptyset, \{a, b\}, \{c\}\}$

T_{27}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{1}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{2}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_{28} = \{X, \emptyset, \{b\}, \{c\}, \{b, c\}, \{a, b\}\}$

$T_{28}^{c} = \{\emptyset, X, \{a, c\}, \{a, b\}, \{a\}, \{c\}\}$

$semi. T_{28} = \{\emptyset, X, \{a, b\}, \{b, c\}, \{c\}\}$

$semi. T_{28}^{c} = \{X, \emptyset, \{c\}, \{a\}, \{a, b\}\}$

T_{28}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a, b\}$	$\{a, c\}$	$\{b, c\}$
$\underline{\rho}(A^{\circ})$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$
$\underline{\rho}\left(semi\,(A^{\circ})\right)$	$\dfrac{0}{3}$	$\dfrac{0}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{3}{3}$	$\dfrac{3}{3}$

$T_{29} = \{X, \emptyset, \{a\}, \{b\}, \{c\}, \{a,b\}, \{a,c\}, \{b,c\}\}$

$T_{29}^c = \{\emptyset, X, \{b,c\}, \{a,c\}, \{a,b\}, \{c\}, \{b\}, \{a\}\}$

$semi . T_{29} = \{\emptyset, X, \{a\}, \{b\}, \{c\}, \{a,b\}, \{b,c\}, \{a,c\}\}$

$semi . T_{29}^c = \{X, \emptyset, \{b,c\}, \{a,c\}, \{a,b\}, \{c\}, \{a\}, \{b\}\}$

T_{29}	$\{a\}$	$\{b\}$	$\{c\}$	$\{a,b\}$	$\{a,c\}$	$\{b,c\}$
$\underline{\rho}(A^\circ)$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$
$\overline{\rho}(\overline{A})$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$
$\underline{\rho}\left(semi\,(A^\circ)\right)$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$
$\overline{\rho}\left(semi\,(\overline{A})\right)$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$

References

1. A.V. Arkhangel'skiˇi. Topological function spaces. Kluwer, Boston, 1992.

2. M . Ganster , Kyungpook Math ,J . 27(2) (1987) ,135-43.

3. Sidney A. MoRRL ((Topology with out Tears)) Version of Februoary 20,2012

4. T.Noiri and V , Popa , Almost weakly continuous multifunctions , Demonstrati Math ,26 (1993) ,363-380 .