
DATA ON THE VALUE OF UNDERSTANDING ISLAMIC RELIGIOUS EDUCATION AND EQUILIBRIUM ANALYSIS OF MATHEMATICAL MODELING OF IMPROVING THE VALUE OF UNDERSTANDING ISLAMIC RELIGIOUS EDUCATION

Barirohmah^{1, a}

¹Doktoral Student of Department of Islamic Education, Universitas Islam Negeri Sunan Kalijaga, Yogyakarta, Indonesia.

^aVocational High School of Nurul Iman, Bantul, Indonesia.

Correspondence: Barirohmah, Email: barisukauin@gmail.com

Abstract

The understanding of Islamic Religious Education of students of Elementary Differential Equations Course Class A, Department of Mathematics, Sunan Kalijaga State Islamic University Yogyakarta is quite good, with an average value = 83.38462, median = 84, and mode = 84, 88, and 92. The equilibrium point of mathematical modeling of Islamic religious education understanding is obtained from a system of four ordinary differential equations.

Keywords: Islamic Religious Education, Elementary Differential Equations Course Students, Average Value, Equilibrium Point.

1. INTRODUCTION

Islamic Religious Education is a science that seeks to prepare students to know, understand, lead, be pious, have noble character, and practice Islamic teachings from its main sources, the holy book of the Qur'an and the Hadith, through guidance, teaching, Mathematical Modeling is a branch of mathematics that studies phenomena that are described in the form of formulas, so that they are easy to learn and calculate. The equilibrium point of mathematical modeling of understanding Islamic religious education is the point where a person's understanding of religion no longer changes/a person's level of religion is good.

Elementary Differential Equations is one of the compulsory courses in the Department of Mathematics, Sunan Kalijaga State Islamic University, Yogyakarta, Indonesia. The lecturer for the Elementary Differential Equations course for class A is Dr. Sugiyanto, S.Si., S.T., M.Si. The Elementary Differential Equations course studies (1) first-order differential equations; (2) second-order differential equations, (3) applications of first-order differential equations; (4) applications of second-order differential equations; (5) higher-order differential equations.

2. QUESTIONS AND ANSWER KEY

2.1. Questions on Understanding Islamic Religious Education

There are 25 questions to ask about the depth of understanding of Islamic Religious Education (Detik, 2024). Here are 25 of these questions.

1. Allah tells us all to always consult in matters ...

- a. ukhrawi
- b. worldly
- c. humane
- d. worship
- e. harakah

2. Islam teaches tolerance and democracy as long as it does not conflict with ...

- a. caliphate

- b. deliberation
 - c. siyasa
 - d. creed
 - e. Muamalah
3. Guarding hell, as a place where humans receive sanctions as a reward for their bad deeds while in the world is the task of ...
- a. Angel Ridwan
 - b. Angel Gabriel
 - c. Angel Malik
 - d. Angel Izrail
 - e. Angel Israfil
4. Angel Raqib is tasked with ...
- a. Recording all good deeds of humans
 - b. Recording all bad deeds of humans
 - c. Questioning humans in the grave
 - d. Delivering revelations
 - e. Taking lives
5. Believing in the angel Raqib is demonstrated by the behavior of ...
- a. Not being lazy in working and studying
 - b. Having good intentions in all actions, both words and deeds
 - c. Always reading the Qur'an and practicing it
 - d. Always asking Allah SWT to be admitted to heaven
 - e. Preparing oneself to face death
6. One of the duties of angels is to record all human deeds. This is explained in ...
- a. Q.S. Al Ghafir [40]: 7
 - b. Q.S. Al Infithar [82]: 10 – 12
 - c. Q.S. Az Zumar [39]: 75
 - d. Q.S. Yasin [36]: 51
 - e. Q.S. As Sajdah [32]: 11
7. Faith in the angel Gabriel is manifested by behavior ...
- a. not lazy in working and studying
 - b. have good intentions in all actions, both words and deeds
 - c. always read the Al-Qur'an and practice it
 - d. always ask Allah SWT to enter heaven
 - e. prepare himself to face death
8. Adit always studies enthusiastically and seriously because he believes that Allah will give him knowledge through angels ...
- a. Ridwan
 - b. Raqib
 - c. Michael
 - d. Jibril
 - e. Israfil

9. The word of Allah in the Qur'an that explains that one of the duties of the angels is to blow the trumpet as a sign of the occurrence of the great apocalypse is ...

- a. Q.S. Al Ghafir [40]: 7
- b. Q.S. Al Infithar [82]: 10 – 12
- c. Q.S. Az Zumar [39]: 75
- d. Q.S. Yasin [36]: 51
- e. Q.S. As Sajdah [32]: 11

10. One of the wisdoms of believing in angels is ...

- a. strengthening the human heart to act istiqamah and not easily afraid
- b. helping people to succeed in business
- c. encouraging people to ask for help from angels
- d. encouraging people to do evil
- e. making people less grateful

11. The following are prohibited in adornment, namely ...

- a. shaving eyebrows
- b. shaving mustaches
- c. shaving beards
- d. wearing silk clothes for women
- e. using nail polish that is not paint (henna)

12. The main purpose of wearing good clothes according to Islam is ...

- a. covering the genitals
- b. as jewelry
- c. to be beautiful to look at
- d. following the times
- e. avoiding crime

13. In spreading the teachings of Islam, the Wali Songo also did not disturb the original traditions of the Nusantara community, did not hurt, and did not disturb their religion and beliefs, but strengthened it in Islamic ways. This approach is called ...

- a. Tadrij
- b. Takfiri
- c. Tarkhim
- d. 'Adamul Haraj
- e. Ahlul Halli wal 'aqd

14. Wali Songo who in his youth had committed theft and robbery against corrupt officials in the kingdom who embezzled tribute money from the people, then distributed the stolen goods to the poor and neglected people is ...

- a. Sunan Muria
- b. Sunan Drajat
- c. Sunan Kalijaga
- d. Sunan Kudus
- e. Sunan Giri

15. The provisions regarding the ethics of visiting are ...

- a. Q.S. Al Ahzab [33]: 21
- b. Q.S. An Nur [24]: 27 – 28

- c. Q.S. Al Ahzab [33]: 59
- d. Q.S. Al A'raf [7]: 27
- e. Q.S. An Nisa [4]: 105

16. One of the etiquettes when traveling is ...

- a. decorate to worship Allah
- b. don't talk about hurtful things
- c. ask permission when visiting someone's house
- d. greetings when meeting fellow Muslims
- e. answering greetings when guests greet them

17. Based on the hadith narrated by Ahmad, riya's actions include ...

- a. Shirk Asghar
- b. unjust towards others
- c. cruel to oneself
- d. great shirk
- e. part of the nature of hasud

18. The Prophet's emigration to Medina began with an attempt to assassinate him by the following Quraish infidel figures, except ...

- a. Abu Lahab
- b. Abdul Bahtari
- c. Syaibah bin Rabi'ah
- d. Abu Sufyan
- e. Walid bin Utbah

19. Linguistically, unjust means ...

- a. mayhem
- b. show off
- c. deny
- d. spiteful
- e. revenge

20. The category of mustahik zakat is explained by Allah in ...

- a. Q.S. At Taubah [9]: 103
- b. Q.S. At Taubah [9]: 60
- c. Q.S. Al Baqarah [2]: 110
- d. Q.S. Al Bayyinah [98]: 5
- e. Q.S. Al Qiyamah [75]: 20 – 21

21. Zakat which is obligatory for every Muslim who has excess from a reasonable family income on the eve of Eid al-Fitr is called zakat ...

- a. tijarah
- b. profession
- c. fitrah
- d. mall
- e. jira'ah

22. One of the deeds whose rewards continue to flow even though the perpetrator has died is ...

- a. five daily fardu prayers

- b. Ramadan fasting
- c. continuous charity
- d. Hajj to Baitullah
- e. zakat mal and zakat fitrah

23. The assets or objects donated are called ...

- a. wakif
- b. mauquf alaih
- c. wakif ma'ah
- d. sigat
- e. mauquf bih

24. After the Prophet migrated to Yathrib, the city finally became known as Madinah Munawwarah. Medina Munawwarah means ...

- a. city of emigration destination
- b. shining city
- c. prosperous city
- d. city of the prophet
- e. santri city

25. One way to avoid malicious behavior is to ...

- a. istiqamah
- b. syaja'ah
- c. qanaah
- d. tasamuh
- e. tabarruj

2.2. Answers to Questions on Understanding Islamic Religious Education

The answers to questions from sub-chapter 2.1 are presented in Table 1.

Table 1. Answers to Questions

No	Answer	No	Answer
1	b. worldly	14	c. Sunan Kalijaga
2	d. creed	15	b. Q.S. An Nur [24]: 27 – 28
3	c. Angel Malik	16	d. greetings when meeting fellow Muslims
4	a. Recording all good deeds of humans	17	a. Shirk Asghar
5	b. Having good intentions in all actions, both words and deeds	18	d. Abu Sufyan
6	b. Q.S. Al Infithar [82]: 10 – 12	19	a. mayhem
7	c. always read the Al-Qur'an and practice it	20	b. Q.S. At Taubah [9]: 60
8	d. Jibril	21	c. fitrah
9	d. Q.S. Yasin [36]: 51	22	c. continuous charity
10	a. strengthening the human heart to act istiqamah and not easily afraid	23	e. mauquf bih
11	a. shaving eyebrows	24	b. shining city
12	a. covering the genitals	25	d. tasamuh
13	d. 'Adamul Haraj		

2.3. Islamic Religious Education Understanding Value Data

Figure 1 is a photo of the respondents. Table 2 is a list of respondents' values. The value obtained is correct x 4. The average value is 83.38462. The mode is 84, 88, and 92. The median is 84.

Table 2. List of Values

No	Student ID Number	Name	Correct	Wrong	Mark
1	23106010001	Rifda Alya Khairunisa	24	1	96
2	23106010003	Avilia Dhescha Berliana	21	4	84
3	23106010005	Fani Mega Rahmatika	21	4	84
4	23106010006	As'ad Muzaki	19	6	76
5	23106010007	Nabila Auliya Pramesti	21	4	84
6	23106010008	Nahli Pramesta Asura	17	8	68
7	23106010011	Gelzy Trya Wardani	24	1	96
8	23106010012	Renita Mufida	22	3	88
9	23106010013	Baiq Khairun Nisa	16	9	64
10	23106010014	Vina Inaratul Fikri	21	4	84
11	23106010020	M Syaid Abdhul Zhafar	20	5	80
12	23106010023	Ogest Zufo Trianta	23	2	92
13	23106010024	Hagus Tri Kuncoro	20	5	80
14	23106010026	Khadjizah Amaya	22	3	88
15	23106010028	Aulia Nur Farida	24	1	96
16	23106010030	Soffia Budi Cahyati	21	4	84
17	23106010032	Kharina Kusuma Ayu	23	2	92
18	23106010033	Alim Fathony Wicaksana	17	8	68
19	23106010034	Ahmad Fakhur Rofiqy	21	4	84
20	23106010035	Ayu Prihastuti	22	3	88
21	23106010036	Muhamad Fiqhan Furqoni	19	6	76
22	23106010037	Ahmad Fauzan Rahmadri	22	3	88
23	23106010038	Neli Maghfiroh	22	3	88
24	23106010042	Zullia Mei Lani	23	2	92
25	23106010044	Shifana Putri Aulia Najwa	23	2	92
26	23106010045	Hanatyas Tria Afifah	23	2	92
27	23106010046	Muhammad Zamzamy Sholakhuddin	15	10	60
28	23106010053	Reina Arum Kurniawati	19	6	76
29	23106010055	Salsabila Ramadhani	24	1	96
30	23106010056	Hilwaa Layyinaa	22	3	88
31	23106010057	Erika Mutia Adelia	20	5	80
32	23106010060	Muhammad Faqih Mustafiq	19	6	76
33	23106010062	Najwa Salsabilah Tasnim	23	2	92
34	23106010067	Ammalia Wahyu Pritasari	18	7	72
35	23106010069	Auliya Ayu Jafanira	22	3	88
36	23106010084	Salwa Ramadhani	23	2	92
37	23106010085	Moh. In'am rojabi	21	4	84

No	Student ID Number	Name	Correct	Wrong	Mark
38	23106010088	Ilham Fauzan Asror Hadi	20	5	80
39	23106010096	Paramita Lailly Puspanagari	16	9	64



Figure 1. Respondent Photo

3. EQUILIBRIUM ANALYSIS

This model is a development of Barirohmah's paper (2023). There are four compartments, namely Aqidah (A), Sharia (B), Morals (C), and Understanding of Islamic Religious Education (D). Aqidah is belief in Islamic teachings. Sharia is a law established by Allah. Morals are good behavior according to Islamic teachings. The values of basic aqidah, basic sharia, and basic morals are represented by the symbols α , β , and γ respectively. Parameters a , b , and c respectively represent improvements in aqidah, sharia, and morals. Parameter d is when the commands in aqidah, sharia, morals are carried out. Equations (1) – (4) are a system that is formed in a person regarding understanding Islamic religious education.

$$\frac{dA}{dt} = \alpha - aA \quad (1)$$

$$\frac{dB}{dt} = \beta - bB \quad (2)$$

$$\frac{dC}{dt} = \gamma - cC \quad (3)$$

$$\frac{dD}{dt} = aA + bB + cC - dD \quad (4)$$

where t is a person's time.

The equilibrium point of mathematical modeling of understanding of Islamic religious education is sought by $\frac{dA}{dt} = 0$, $\frac{dB}{dt} = 0$, $\frac{dC}{dt} = 0$, $\frac{dD}{dt} = 0$. The equilibrium point of understanding of Islamic religious education is $A = \frac{\alpha}{a}$, $B = \frac{\beta}{b}$, $C = \frac{\gamma}{c}$, and $D = \frac{\alpha + \beta + \gamma}{d}$. The meaning of the equilibrium point of understanding of Islamic religious education is the parameter of the values of aqidah, sharia, morals and how much aqidah, sharia, and morals are carried out.

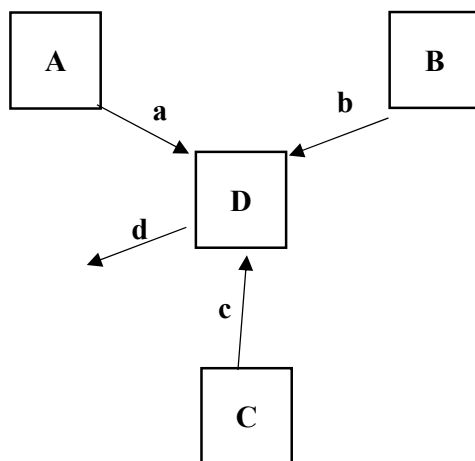


Figure 2. Modeling of Understanding of Islamic Religious Education

4. CONCLUSION

Students of Elementary Differential Equations Class A, Department of Mathematics, Sunan Kalijaga State Islamic University of Yogyakarta number 39 people. The lowest score of students with a total of 25 questions is student understanding is 60 and the highest is 96. The equilibrium point of understanding of Islamic religious education is influenced by the parameters of the values of aqidah, sharia, morals and how much aqidah, sharia, and morals are carried out.

5. ACKNOWLEDGEMENT

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