

MITA International School Syllabus 2018
三田国際学園中学校 平成30年度 シラバス

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|----------------------------------|--------|---------------------------------|--------|--------------------|------------------|
| Grade Level / Course 学年 / コース | S1 ICA | Subject Area / Class 教科 / 科目 | Math I | Class hours 時間数 | 4 hours per week |
|----------------------------------|--------|---------------------------------|--------|--------------------|------------------|

1学期 中間試験 Term 1 Midterm

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|------------------------------|---------------------------|-------------------------------------|--------------------------------------|
| Name of Unit, Project 単元名 | Ch 4: Quadratic Functions | Textbooks / Materials 使用教科書 / 教材 | Algebra 2 (Glencoe 2014 Common Core) |
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| Unit Description 単元の概要 | Students will learn how to graph and analyze the graphs of quadratic functions. Students will learn how to perform operations with complex numbers and how to graph in the complex plane. Students will learn how to solve and graph quadratic inequalities. |
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Class Standards 評価規準

Learning Objectives 学習内容

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| 楽 | A3 Apply knowledge to solve a real-world problem. Apply mathematical reasoning. | B3 Reason mathematically. Model with mathematics. | C3 Create an original problem or model that benefits society. Construct viable arguments. |
| 好 | A2 Use the given information to solve a problem. Make sense of problems and persevere in solving them. Attend to precision. | B2 Connect mathematical concepts. Critique the reasoning of others. Draw, construct and describe geometrical figures and describe the relationships between them. | C2 Efficiently deconstruct problems. Use tools strategically. |
| 知 | A1 Identify the problem and given information. Know the meaning of key vocabulary. Use properties of operations to generate equivalent expressions. | B1 Break down a problem into manageable components. Look for structure. Identify the logical units of a problem and their connections | C1 Reason abstractly and quantitatively. Make use of structure. |
| | Recognition | Logical Thinking | Creative Thinking |

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| A3 Solve application problems using quadratics. | B3 Use quadratics to model a situation. | C3 |
| A2 Solve quadratic equations. | B2 Graph quadratic equations by hand. | C2 |
| A1 Understand and use key vocabulary. | B1 Understand the relationship between a quadratic equation and a parabola. | C1 |

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| Others 備考 | <評価方法> <ICT> Students will be introduced to Khan Academy and Google Classroom. They will complete assignments on these platforms throughout the year. |
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|----------------------------------|--------|---------------------------------|--------|--------------------|------------------|

1学期 期末試験 Term 1 Final

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|------------------------------|--|-------------------------------------|--------------------------------------|
| Name of Unit, Project 単元名 | Ch 5: Polynomial Functions; Ch 6: Inverses and Radicals | Textbooks / Materials 使用教科書 / 教材 | Algebra 2 (Glencoe 2014 Common Core) |
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| Unit Description 単元の概要 | <p>Students will learn how to do operations with polynomials. They will learn dimensional analysis.</p> <p>Students will learn how to do operations on functions. They will learn how to find function inverses.</p> <p>Students will learn how to use rational exponents and solve equations with radicals.</p> |
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| Class Standards 評価規準 | Learning Objectives 学習内容 |
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|----------|---|---|--|---|---|---|
| 楽 | A3 Apply knowledge to solve a real-world problem. Apply mathematical reasoning. | B3 Reason mathematically. Model with mathematics. | C3 Create an original problem or model that benefits society. Construct viable arguments. | A3 Solve application problems using polynomials and/or radical functions. | B3 Use radical functions to model a situation. | C3 |
| 好 | A2 Use the given information to solve a problem. Make sense of problems and persevere in solving them. Attend to precision. | B2 Connect mathematical concepts. Critique the reasoning of others. Draw, construct and describe geometrical figures and describe the relationships between them. | C2 Efficiently deconstruct problems. Use tools strategically. | A2 Perform operations on functions. | B2 Graph radical functions. | C2 |
| 知 | A1 Identify the problem and given information. Know the meaning of key vocabulary. Use properties of operations to generate equivalent expressions. | B1 Break down a problem into manageable components. Look for structure. Identify the logical units of a problem and their connections | C1 Reason abstractly and quantitatively. Make use of structure. | A1 Understand and use key vocabulary. Simplify polynomials. | B1 Understand the connection between inverses and their graphs. | C1 Solve problems using dimensional analysis. |
| | Recognition | Logical Thinking | Creative Thinking | | | |

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| Others 備考 | <評価方法> <ICT> Students will use Desmos to analyze graphs of various functions. |
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2学期 中間試験 Term 2 Midterm

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| Name of Unit, Project 単元名 | Ch. 7: Exponential and Logarithmic Functions and Relations | Textbooks / Materials 使用教科書 / 教材 | Algebra 2 (Glencoe 2014 Common Core) |
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| Unit Description 単元の概要 | <p>Students will learn how to graph exponential and logarithmic functions.</p> <p>Students will learn how to solve exponential and logarithmic equations.</p> <p>Students will learn how to solve application problems involving compound interest and population growth.</p> |
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| Class Standards 評価規準 | Learning Objectives 学習内容 |
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| 楽 | A3 Apply knowledge to solve a real-world problem. Apply mathematical reasoning. | B3 Reason mathematically. Model with mathematics. | C3 Create an original problem or model that benefits society. Construct viable arguments. | A3 Solve application problems involving exponentials. | B3 Use exponential functions to model a situation. | C3 |
| 好 | A2 Use the given information to solve a problem. Make sense of problems and persevere in solving them. Attend to precision. | B2 Connect mathematical concepts. Critique the reasoning of others. Draw, construct and describe geometrical figures and describe the relationships between them. | C2 Efficiently deconstruct problems. Use tools strategically. | A2 Solve exponential equations. | B2 Graph exponential functions. | C2 Solve growth problems. |
| 知 | A1 Identify the problem and given information. Know the meaning of key vocabulary. Use properties of operations to generate equivalent expressions. | B1 Break down a problem into manageable components. Look for structure. Identify the logical units of a problem and their connections | C1 Reason abstractly and quantitatively. Make use of structure. | A1 Understand and use key vocabulary. | B1 Understand the relationship between exponential and logarithmic graphs. | C1 Use exponential functions to find compound interest. |
| | Recognition | Logical Thinking | Creative Thinking | | | |

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| Others 備考 | <p><評価方法></p> <p><ICT> Students will use Desmos to solve compound interest and population growth problems.</p> |
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|----------------------------------|--------|---------------------------------|--------|--------------------|------------------|

2 学期 期末試験 Term 2 Final

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|------------------------------|---|-------------------------------------|--------------------------------------|
| Name of Unit, Project 単元名 | Ch. 8: Rational Functions and Relations | Textbooks / Materials 使用教科書 / 教材 | Algebra 2 (Glencoe 2014 Common Core) |
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| Unit Description 単元の概要 | <p>Students will learn how to do operations with rational expressions.</p> <p>Students will learn how to graph rational expressions and analyze features of the graph.</p> <p>Students will learn how to solve application problems such as finding a weighted average.</p> |
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Class Standards 評価規準

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| 楽 | A3 Apply knowledge to solve a real-world problem. Apply mathematical reasoning. | B3 Reason mathematically. Model with mathematics. | C3 Create an original problem or model that benefits society. Construct viable arguments. |
| 好 | A2 Use the given information to solve a problem. Make sense of problems and persevere in solving them. Attend to precision. | B2 Connect mathematical concepts. Critique the reasoning of others. Draw, construct and describe geometrical figures and describe the relationships between them. | C2 Efficiently deconstruct problems. Use tools strategically. |
| 知 | A1 Identify the problem and given information. Know the meaning of key vocabulary. Use properties of operations to generate equivalent expressions. | B1 Break down a problem into manageable components. Look for structure. Identify the logical units of a problem and their connections | C1 Reason abstractly and quantitatively. Make use of structure. |
| | Recognition | Logical Thinking | Creative Thinking |

Learning Objectives 学習内容

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| A3 Find a weighted average. Solve application problems. | B3 Model a situation using rational functions. | C3 |
| A2 Solve rational equations. | B2 Graph rational functions. | C2 Recognize and solve inverse and combined variation problems. |
| A1 Understand and use key vocabulary. | B1 Connect graphs of rational functions with their equation. | C1 Recognize and solve direct and joint variation problems. |

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| Others 備考 | <p><評価方法></p> <p><ICT> Students will use Khan Academy and Desmos for various exercises and graphing in this unit.</p> |
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|----------------------------------|--------|---------------------------------|--------|--------------------|------------------|

3 学期 学年末試験 Term 3 Final

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| Name of Unit, Project 単元名 | Ch 12: Trigonometric Functions | Textbooks / Materials 使用教科書 / 教材 | Algebra 2 (Glencoe 2014 Common Core) |
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| Unit Description 単元の概要 | Students will learn the definition of the trigonometric functions and use them to find side lengths and angle measures. Students will draw angles in standard position. They will learn how to convert between radian and degree measure. Students will use trigonometric functions to solve real-world problems such as calculating an unknown distance. |
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| Class Standards 評価規準 | Learning Objectives 学習内容 | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|--|--|----------|---|---|--|----------|---|---|--|--|--------------------|-------------------------|--------------------------|---|--|---|-----------|--|------------------------------------|---|---|---|--|
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;">楽</td> <td style="width: 25%;"> A3 Apply knowledge to solve a real-world problem. Apply mathematical reasoning. </td> <td style="width: 25%;"> B3 Reason mathematically. Model with mathematics. </td> <td style="width: 25%;"> C3 Create an original problem or model that benefits society. Construct viable arguments. </td> </tr> <tr> <td style="text-align: center;">好</td> <td> A2 Use the given information to solve a problem. Make sense of problems and persevere in solving them. Attend to precision. </td> <td> B2 Connect mathematical concepts. Critique the reasoning of others. Draw, construct and describe geometrical figures and describe the relationships between them. </td> <td> C2 Efficiently deconstruct problems. Use tools strategically. </td> </tr> <tr> <td style="text-align: center;">知</td> <td> A1 Identify the problem and given information. Know the meaning of key vocabulary. Use properties of operations to generate equivalent expressions. </td> <td> B1 Break down a problem into manageable components. Look for structure. Identify the logical units of a problem and their connections </td> <td> C1 Reason abstractly and quantitatively. Make use of structure. </td> </tr> <tr> <td></td> <td style="text-align: center;">Recognition</td> <td style="text-align: center;">Logical Thinking</td> <td style="text-align: center;">Creative Thinking</td> </tr> </table> | 楽 | A3 Apply knowledge to solve a real-world problem. Apply mathematical reasoning. | B3 Reason mathematically. Model with mathematics. | C3 Create an original problem or model that benefits society. Construct viable arguments. | 好 | A2 Use the given information to solve a problem. Make sense of problems and persevere in solving them. Attend to precision. | B2 Connect mathematical concepts. Critique the reasoning of others. Draw, construct and describe geometrical figures and describe the relationships between them. | C2 Efficiently deconstruct problems. Use tools strategically. | 知 | A1 Identify the problem and given information. Know the meaning of key vocabulary. Use properties of operations to generate equivalent expressions. | B1 Break down a problem into manageable components. Look for structure. Identify the logical units of a problem and their connections | C1 Reason abstractly and quantitatively. Make use of structure. | | Recognition | Logical Thinking | Creative Thinking | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"> A3 Solve real-world problems using trig functions. </td> <td style="width: 33%;"> B3 Model using trigonometric functions. </td> <td style="width: 33%;"> C3 </td> </tr> <tr> <td> A2 Find values of trigonometric functions. </td> <td> B2 Graph trig functions. </td> <td> C2 Choose methods to solve triangles. </td> </tr> <tr> <td> A1 Understand and use key vocabulary. Convert between radians and degrees. </td> <td> B1 Use trigonometry to solve triangles. </td> <td> C1 Describe and graph other trigonometric functions. </td> </tr> </table> | A3 Solve real-world problems using trig functions. | B3 Model using trigonometric functions. | C3 | A2 Find values of trigonometric functions. | B2 Graph trig functions. | C2 Choose methods to solve triangles. | A1 Understand and use key vocabulary. Convert between radians and degrees. | B1 Use trigonometry to solve triangles. | C1 Describe and graph other trigonometric functions. |
| 楽 | A3 Apply knowledge to solve a real-world problem. Apply mathematical reasoning. | B3 Reason mathematically. Model with mathematics. | C3 Create an original problem or model that benefits society. Construct viable arguments. | | | | | | | | | | | | | | | | | | | | | | | |
| 好 | A2 Use the given information to solve a problem. Make sense of problems and persevere in solving them. Attend to precision. | B2 Connect mathematical concepts. Critique the reasoning of others. Draw, construct and describe geometrical figures and describe the relationships between them. | C2 Efficiently deconstruct problems. Use tools strategically. | | | | | | | | | | | | | | | | | | | | | | | |
| 知 | A1 Identify the problem and given information. Know the meaning of key vocabulary. Use properties of operations to generate equivalent expressions. | B1 Break down a problem into manageable components. Look for structure. Identify the logical units of a problem and their connections | C1 Reason abstractly and quantitatively. Make use of structure. | | | | | | | | | | | | | | | | | | | | | | | |
| | Recognition | Logical Thinking | Creative Thinking | | | | | | | | | | | | | | | | | | | | | | | |
| A3 Solve real-world problems using trig functions. | B3 Model using trigonometric functions. | C3 | | | | | | | | | | | | | | | | | | | | | | | | |
| A2 Find values of trigonometric functions. | B2 Graph trig functions. | C2 Choose methods to solve triangles. | | | | | | | | | | | | | | | | | | | | | | | | |
| A1 Understand and use key vocabulary. Convert between radians and degrees. | B1 Use trigonometry to solve triangles. | C1 Describe and graph other trigonometric functions. | | | | | | | | | | | | | | | | | | | | | | | | |

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| Others 備考 | <評価方法> <ICT> Students will use Khan Academy and Desmos to study trigonometric functions. |
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