Discipline	Course Number	Title
Mathematics	169	MTH 169 07/10/2017- Intermediate Algebra
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Mathematics	Brenda Foster
Date of Last Filed Assessment Report		

I. Assessment Results per Student Learning Outcome

Outcome 1: Sketch and transform accurate graphs of quadratic, rational, radical, exponential and logarithmic functions.

- Assessment Plan

    o Assessment Tool: Common departmental exam questions administered to students in all sections.

    o Assessment Date: Fall 2010

    o Course section(s)/other population: All

    o Number students to be assessed: All

    o How the assessment will be scored: Members of the math department will collect and score the questions. A four point rubric will be used to score each question.

    o Standard of success to be used for this assessment: 70% of students earning a C or better must score at least 70% on the questions.

    o Who will score and analyze the data: A committee of department members, led by the course mentor, will blind score the questions and analyze the data.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2016	2017	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
678	50

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

> Withdrawal, absence, and sampling.
>
> I obtained my sample of 50 exams by numbering all of the available exams and then using a unique random number generator to select the 50. The paper and pencil exam was given to online sections as well as to face-to-face sections. The online sections were included in the exams that were sampled.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

> The assessment tool was a paper and pencil final exam. All students across all modes and locations of course delivery were given the paper and pencil final exam.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

> **Students were asked to graph the following functions: quadratic, rational, and absolute value.**
>
> A 4-point rubric was used to assess this outcome.
>
> **4 points - The student provides correct solutions and strategies.** The student explains and justifies his/her thinking thoroughly and clearly. The student connects and applies the standards in complex ways.
>
> **3 points - The student provides mostly correct solutions and strategies with minor errors.** The student justifies his/her thinking. The student demonstrates mastery of the standards that were explicitly taught.
>
> **2 points - The student demonstrates some correct thinking about solutions and strategies.** Student explains their thinking but it may be hard to follow. The student demonstrates partial understanding of the standards that were explicitly taught.
>
> **1 point - The student demonstrates some evidence of mathematical thinking, but shows little understanding.** The student offers little explanation of his/her thinking or what is offered does not make sense. The student demonstrates minimal or no understanding of the standard.

> **0 points - No evidence of attempting the task.**

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

> Met Standard of Success: <u>Yes</u>
>
> **quadratic function**: 76% of the students were able to graph this function at a level of 3 (out of 4 possible points) or better. The students provided mostly correct solutions and strategies with minor errors.
>
> **rational function:** 62% of the students were able to graph this function at a level of 3 (out of 4 possible points) or better. The students provided mostly correct solutions and strategies with minor errors.
>
> **absolute value function**: 82% of the students were able to graph this function at a level of 3 (out of 4 possible points) or better. The students provided mostly correct solutions and strategies with minor errors.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

> Students met the standard of success.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

> We will allow more time in this area; specifically an earlier introduction to the families of functions, and then an earlier introduction of function translations. There is room for improvement in the demonstration and understanding of function translations.

Outcome 2: Simplify expressions and solve problems involving functions and equations using algebraic concepts.

- Assessment Plan

  - Assessment Tool: Common departmental exam questions administered to students in all sections.

  - Assessment Date: Fall 2010

- o Course section(s)/other population: All

- o Number students to be assessed: All

- o How the assessment will be scored: Members of the math department will collect and score the questions. A four point rubric will be used to score each question.

- o Standard of success to be used for this assessment: 70% of students earning a C or better must score at least 70% on the questions.

- o Who will score and analyze the data: A committee of department members, led by the course mentor, will blind score the questions and analyze the data.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2016	2017	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
678	50

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

Withdrawal, absence, and sampling.

I obtained my sample of 50 exams by numbering all of the available exams and then using a unique random number generator to select the 50. The paper and pencil exam was given to online sections as well as to face-to-face sections. The online sections were included in the exams that were sampled.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

The assessment tool was a paper and pencil final exam. All students across all modes and locations of course delivery were given the paper and pencil final exam.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Students were asked to perform the following tasks: Simplify rational expressions, solve rational equations, simplify radical expressions, solve radical equations, solve quadratic equations, and solve exponential and logarithmic equations.

A 4-point rubric was used to assess this outcome.

4 points - The student provides correct solutions and strategies. The student explains and justifies his/her thinking thoroughly and clearly. The student connects and applies the standards in complex ways.

3 points - The student provides mostly correct solutions and strategies with minor errors. The student justifies his/her thinking. The student demonstrates mastery of the standards that were explicitly taught.

2 points - The student demonstrates some correct thinking about solutions and strategies. Student explains their thinking but it may be hard to follow. The student demonstrates partial understanding of the standards that were explicitly taught.

1 point - The student demonstrates some evidence of mathematical thinking, but shows little understanding. The student offers little explanation of his/her thinking or what is offered does not make sense. The student demonstrates minimal or no understanding of the standard.

0 points - No evidence of attempting the task.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: <u>Yes</u>

Simplifying rational expressions: 76% of the students were able to graph this function at a level of 3 (out of 4 possible points) or better. The students provided mostly correct solutions and strategies with minor errors.

Solving rational equations: 73% of the students were able to graph this function at a level of 3 (out of 4 possible points) or better. The students provided mostly correct solutions and strategies with minor errors.

Simplifying radical expression: 81% of the students were able to graph this function at a level of 3 (out of 4 possible points) or better. The students provided mostly correct solutions and strategies with minor errors.

> **Solving radical equations**: 84% of the students were able to graph this function at a level of 3 (out of 4 possible points) or better. The students provided mostly correct solutions and strategies with minor errors.
>
> **Solving quadratic equations**: 79% of the students were able to graph this function at a level of 3 (out of 4 possible points) or better. The students provided mostly correct solutions and strategies with minor errors.
>
> **Solve exponential and logarithmic equations**: 70% of the students were able to graph this function at a level of 3 (out of 4 possible points) or better. The students provided mostly correct solutions and strategies with minor errors.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

> Students met the standard of success.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

> More emphasis on the distinction between an expression and an equation will lend better understanding in this area across the board. An earlier introduction and a continual thread of this concept throughout the course will strengthen student understanding.

II. Course Summary and Action Plans Based on Assessment Results

1. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

> I feel good about student success for this course. I was surprised to see that my students have met the standards for this course. However, it is clear that students can improve. Clear exposure in areas that are new to the students will be my emphasis in the coming semesters. I'm excited!

2. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

> I plan to present the assessment results, including the action plan, to my colleagues during our Fall 2017 in-service department meeting.

3.
   Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
No changes intended.			

4. Is there anything that you would like to mention that was not already captured?

5.

III. Attached Files

Assessment Tool FE MTH 169
Rubric for MTH 169
Summary Data for MTH 169

Faculty/Preparer:	Brenda Foster	**Date:** 07/11/2017
Department Chair:	Lisa Rombes	**Date:** 07/12/2017
Dean:	Kristin Good	**Date:** 07/13/2017
Assessment Committee Chair:	Michelle Garey	**Date:** 10/18/2017