

What is *Engaging Mathematics, Volume I: Algebra II*?

1 An instructional resource featuring 77 Texas Essential Knowledge and Skills (TEKS)-based, classroom-ready mathematics activities that each take approximately 10 to 15 minutes to complete. We took the best activities of the original series, refreshed and revised them, and then added new activities where needed to create a collection of activities that can be used throughout the year.

2 A TEKS-based resource that addresses all of the Algebra II TEKS. *Engaging Mathematics, Volume I* complements teachers existing resources and provides—

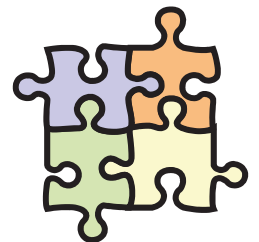
- Rigorous problem-solving tasks;
- Manipulative-based tasks;
- Vocabulary development tasks; and
- Sorting and classifying tasks.

3 A resource that supports high-quality, research-based practices by providing activities that can be used for various purposes, including—

- Engaging warm-ups and opening tasks that draw students into relevant and challenging mathematics;
- Instructional support for all students to help learners articulate, refine, and retain important mathematical concepts, processes, and skills;
- Short-cycle, formative assessments that provide immediate and ongoing feedback to guide instruction for the teacher and learning for the student; and
- Supplemental tasks to support intervention strategies.

4 A resource that incorporates the mathematical process standards by promoting—

- Reasoning, generalizing, and problem-solving in mathematical and real-world contexts;
- Modeling, using tools, and connecting representations;
- Analysis; and
- Communication.



What is found in an Engaging Mathematics TEKS-based activity?

Each activity addresses a specific student expectation that is reflected in the content objective.

Common classroom materials are used for ease of preparation. Materials are listed 1-per-student unless otherwise noted. Page titles for student handouts are represented with bold font.

Students should have continuous access to graphing technology.

Facilitation questions are provided for teacher use when supporting student thinking and discourse.

Attributes of Functions, Activity 2 2A(2)(A)

Activity Objective

The student will determine attributes of given functions.

Materials

- Changing Graphs

Facilitation Questions

- **What is an asymptote?**
An asymptote is a vertical or horizontal line that the function values approach.
- **Which values correspond to the domain? the range?**
The x-values correspond to the domain. The y-values correspond to the range.
- **How can you determine the minimum function value on a given interval?**
Possible answer: I can examine the graph over the interval for the lowest point and determine its y-value.
- **How can you determine if the graph of a function is symmetric about an axis?**
Possible answer: I can trace the graph and the axes onto patty paper and then fold the patty paper along an axis. If both sides of the graph match when folded then the graph is symmetric about that axis.

Answers

- False* a. The graph is symmetric about the x-axis y-axis.

True b. The function graphed has a minimum value of 0.

False c. The range for the function graphed is all real numbers $y > 0$.
- False* a. The maximum value on the interval [1, 4] of the function graphed is 4 2.

False b. The domain for the function graphed is all real numbers $x \geq 0$.

True c. The function graphed does not have an asymptote.
- False* a. The graph is symmetric about the y-axis origin.

True b. The minimum value on the interval [0, 1] of the function graphed is 1.

True c. The function graphed has an asymptote at y = 0.

© 2019 Region 4 Education Service Center

4

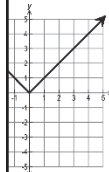
An answer key is included for each activity.

Each activity includes an opportunity for students to articulate and summarize aspects of their learning.

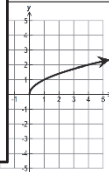
Changing Graphs

Date: _____

statements are true or false for the given graph. If a statement is false, correct portion to make a true statement.

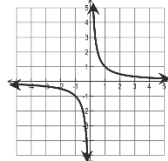


- The graph is symmetric about the x-axis.
- The function graphed has a minimum value of 0.
- The range for the function graphed is all real numbers.



- The maximum value on the interval [1, 4] of the function graphed is 4.
- The domain for the function graphed is all real numbers.
- The function graphed does not have an asymptote.

3.



- The graph is symmetric about the y-axis.
- The minimum value on the interval [0, 1] of the function graphed is 1.
- The function graphed has an asymptote at y = 0.

Communicating about Mathematics

How can you determine if a function has an asymptote?



5

© 2019 Region 4 Education Service Center