Algebra 2 Unit 2: Polynomials and Rational Functions
Lessons 1–5: What Is a Polynomial?

Explore, Play, and Discuss	● I can create and interpret a polynomial that models the volume of a box. ● I can use polynomials to understand different kinds of situations.	
	Activity Suggestions: ➢ Lesson 1: Students respond to questions in an online or paper journal, or talk them over with someone at home. Attention should be given to how to address the material in the launch and instructions. ➢ Activity 2.3: Students respond to questions in an online or paper journal, or talk them over with someone at home. Attention should be given to how to address the material in the launch and instructions. Consider providing a worked example to illustrate the important aspects.	**Assessment Suggestions:** ➢ Check Your Readiness Assessment: Administer items 1–5 within the first day or two of this section. Use the guidance provided with each problem to adjust instruction so that students can access the math in the unit.

Deep Dive	● I can identify important characteristics of polynomial graphs and expressions. ● I understand that if you add, subtract, or multiply polynomials, you get another polynomial.	
	Activity Suggestions: ➢ Activity 3.2: Virtual card sort, sync discussion ➢ Lesson 4: sync discussion	**Assessment Suggestions:** ➢ Lesson 4 Cool-down

Synthesize and Apply	● I can find the zeros of a function from its factored form.

	Activity Suggestions:	**Assessment Suggestions:**
	➢ Activity 3.3: Students respond to questions in an online or paper journal, or talk them over with someone at home. ➢ Lesson 5: Virtual card sort. Students respond to questions in an online or paper journal, or talk them over with someone at home.	➢ Lesson 5 Cool-down ➢ Revisions to previous assessment prompts ➢ Students use learning targets to decide what additional practice they need.

Ongoing Practice	● Assign one or more of the distributed practice problem sets from Lessons 1–5 to be completed over the time period that the section is being worked on. ● These could also be lagging, so that students are working on practice problems from the previous section or unit during this section or unit. ● Specify which problems students should submit, or let them choose. ● Note: Several existing platforms already have IM's practice problems loaded so that students can complete and submit them online. Some can be autoscored.

Anytime Resources	● Delve into one of the modeling prompts (1, 2, or 3). ● Teach and encourage students to study the lesson summaries (at the end of every lesson) and refer back to them.

Lessons 6–11: Working with Polynomials (Arc 1)

<table>
<tr><td rowspan="2">Explore, Play, and Discuss</td><td colspan="2">● I can write an expression for a function that has specific horizontal intercepts.</td></tr>
<tr><td>Activity Suggestions:
➢ Activity 6.2: Students respond to questions in an online or paper journal, or talk them over with someone at home.
➢ Lesson 7: Students respond to questions in an online or paper journal, or talk them over with someone at home.</td><td>Assessment Suggestions:
➢ Check Your Readiness Assessment: Administer items 6–8 within the first day or two of this section. Use the guidance provided with each problem to adjust instruction so that students can access the math in the unit.
➢ Lesson 7 Cool-down</td></tr>
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<tr><td rowspan="2">Deep Dive</td><td colspan="2">● I can find where two polynomial functions intersect.
● I understand why a function's end behavior is determined by its leading term.</td></tr>
<tr><td>Activity Suggestions:
➢ Lesson 11: sync discussion
➢ Activity 8.2: sync discussion</td><td>Assessment Suggestions:
➢ Lesson 11 Cool-down
➢ Lesson 8 Cool-down</td></tr>
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<table>
<tr><td rowspan="2">Synthesize and Apply</td><td colspan="2">● I can identify the end behavior of a polynomial function from its equation.
● I can use zeros and multiplicities to sketch a graph of a polynomial.</td></tr>
<tr><td>Activity Suggestions:
➢ Lesson 9: Students respond to questions in an online or paper journal, or talk them over with someone at home.
➢ Activity 10.2: Students respond to questions in an online or paper journal, or talk them over with someone at home.</td><td>Assessment Suggestions:
➢ Lesson 9 Cool-down
➢ Mid-Unit Assessment questions 1, 2, and 4
➢ Revisions to previous assessment prompts
➢ Students use learning targets to decide what additional practice they need.</td></tr>
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Ongoing Practice	- Assign one or more of the distributed practice problem sets from Lessons 6–11 to be completed over the time period that the section is being worked on. - These could also be lagging, so that students are working on practice problems from the previous section or unit during this section or unit. - Specify which problems students should submit, or let them choose. - Note: Several existing platforms already have IM's practice problems loaded so that students can complete and submit them online. Some can be autoscored.

Anytime Resources	- Delve into one of the modeling prompts (1, 2, or 3). - Teach and encourage students to study the lesson summaries (at the end of every lesson) and refer back to them.

Lessons 12–15: Working with Polynomials (Arc 2)

Explore, Play, and Discuss	● I can divide one polynomial by another.	
	Activity Suggestions: ➢ Lesson 12: Students respond to questions in an online or paper journal, or talk them over with someone at home.	**Assessment Suggestions:** ➢ Lesson 12 Cool-down

Deep Dive	● I can use long division to divide polynomials.
	Activity Suggestions: ➢ Lesson 13: sync discussion (This lesson is long as it includes an extra optional activity.)	**Assessment Suggestions:** ➢ Lesson 13 Cool-down

Synthesize and Apply	● I understand the remainder theorem and why it's true.
	Activity Suggestions: ➢ Activity 14.1: Students respond to questions in an online or paper journal, or talk them over with someone at home. ➢ Lesson 15: Students respond to questions in an online or paper journal, or talk them over with someone at home.	**Assessment Suggestions:** ➢ Lesson 15 Cool-down ➢ Mid-Unit Assessment questions 3, 5–7 ➢ Revisions to previous assessment prompts ➢ Students use learning targets to decide what additional practice they need.

Ongoing Practice	● Assign one or more of the distributed practice problem sets from Lessons 12–15 to be completed over the time period that the section is being worked on. ● These could also be lagging, so that students are working on practice problems from the previous section or unit during this section or unit. ● Specify which problems students should submit, or let them choose. ● Note: Several existing platforms already have IM's practice problems loaded so that students can complete and submit them online. Some can be autoscored.

Anytime Resources	• Delve into one of the modeling prompts (1, 2, or 3). • Teach and encourage students to study the lesson summaries (at the end of every lesson) and refer back to them.

Lessons 16–26: Rational Functions and Equations

Explore, Play, and Discuss	• I can write a rational function to model different properties of cylinders. • I can identify a vertical asymptote from a graph or an equation of a rational function.

Activity Suggestions: ➢ Lesson 16: Students respond to questions in an online or paper journal, or talk them over with someone at home. ➢ Activities 17.1 and 17.2: Students respond to questions in an online or paper journal, or talk them over with someone at home.	**Assessment Suggestions:** ➢ Lesson 16 Cool-down ➢ Lesson 17 Cool-down

Deep Dive	• I can identify a horizontal asymptote from a graph or an equation of a rational function. • I can write rational expressions that represent averages to answer questions about the situation.

Activity Suggestions: ➢ Lesson 18: sync discussion ➢ Activity 20.2: sync discussion	**Assessment Suggestions:** ➢ Lesson 18 Cool-down ➢ Lesson 20 Cool-down

Synthesize and Apply	● I can find the end behavior of a rational function by rewriting it as $f(x) = q(x) + r(x)/b(x)$ ● I know how to check for extraneous solutions to rational equations.

Synthesize and Apply	**Activity Suggestions:** ➢ Activity 19.3: Students respond to questions in an online or paper journal, or talk them over with someone at home. ➢ Lesson 22: Students respond to questions in an online or paper journal, or talk them over with someone at home.	**Assessment Suggestions:** ➢ Lesson 22 Cool-down ➢ End of Unit Assessment questions 1, 3, 4, 6, 7 ➢ Revisions to previous assessment prompts ➢ Students use learning targets to decide what additional practice they need.

Ongoing Practice	● Assign one or more of the distributed practice problem sets from Lessons 16–22 to be completed over the time period that the section is being worked on. ● These could also be lagging, so that students are working on practice problems from the previous section or unit during this section or unit. ● Specify which problems students should submit, or let them choose. ● Note: Several existing platforms already have IM's practice problems loaded so that students can complete and submit them online. Some can be autoscored.

Anytime Resources	● Delve into one of the modeling prompts (1, 2, or 3). ● Emphasize the Are You Ready for More opportunities to students who want to explore the topics in more depth. ● Teach and encourage students to study the lesson summaries (at the end of every lesson) and refer back to them.