Lesson 7.5: Quadratic Inequalities in Two Variables

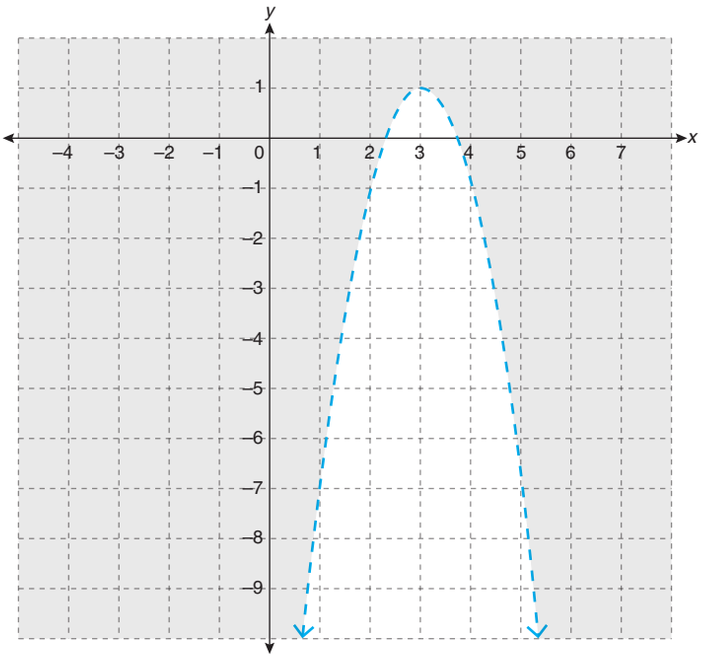
Complete the *Practice* below. When you have completed all the questions for *Lesson 7.5 Practice – VI* with your best work, mark your work by first comparing your answers to the solutions provided in *Appendix 2: Solutions*. Then, apply the rubric found at the beginning of the *Workbook*.

Practice – VI

1. Determine if the point (5, 17) is a solution to $y \leq x^2 - 2x + 4$.

2. Graph the inequality $y < \frac{1}{4}(x+2)^2 - 3$.

3. Write an inequality to represent the given graph.



4. Suppose the points (3, 0) and (5, 0) are solutions to a quadratic inequality, but the point (4, 0) is not. Describe how the direction of opening of the parabolic boundary can be determined.

5. Use technology to graph the solution to $y > 4x^2 - 27x + 151$.

6. In one type of solar thermal power station, an array of parabolic troughs focuses sunlight onto a pipe to heat steam inside. The troughs are rotated throughout the day, so they always directly face the sun. Describe the region of sunlight captured by a trough with a width of 6 m and a maximum depth of 1 m.

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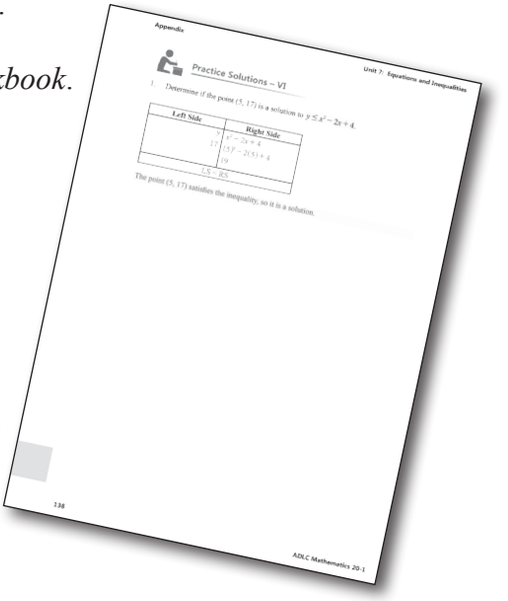
Mark your work for *Lesson 7.5 Practice – VI* using the solutions provided in *Appendix 2: Solutions*. Then, apply the rubric found at the beginning of the *Workbook*.

Transfer your self-assessed mark to the front cover of the *Workbook*.

My self-assessed mark on *Lesson 7.5 Practice – VI* is _____.


Appendix

Unit 7: Equations and Inequalities

Practice Solutions – VI

1. Determine if the point (5, 17) is a solution to $y \leq x^2 - 2x + 4$.

Left Side	Right Side
y	$x^2 - 2x + 4$
17	$(5)^2 - 2(5) + 4$
	19
LS < RS	

The point (5, 17) satisfies the inequality, so it is a solution.

138

ADLC Mathematics 20-1

Reflect on your understanding of the concepts addressed in the *Practice* exercises in the table provided.

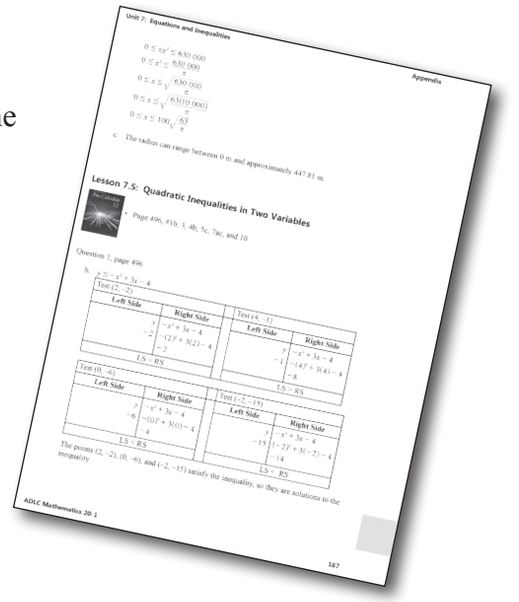
Question Number	Got it!	Almost there…	Need to retry or ask for help.	Similar questions from *Pre-Calculus 11*
1				p.496 #1b
2				p.497 #4b, 5c
3				p.497 #3
4				
5				p.497 #7ac
6				p.498 #10

You may proceed to *Explore Your Understanding Assignment* on the next page of this *Workbook*.

Note: Before you complete *Explore Your Understanding*, you may review your skills and get more practice by completing the following problems in *Pre-Calculus 11*.

- Page 496, #1b, 3, 4b, 5c, 7ac, and 10

Check your work in *Enhance Your Understanding*.


Unit 7: Equations and Inequalities

Appendix

$0 \leq \pi r^2 \leq 630\,000$

$0 \leq r^2 \leq \frac{630\,000}{\pi}$

$0 \leq r \leq \sqrt{\frac{630\,000}{\pi}}$

$0 \leq r \leq \sqrt{\frac{630\,000}{\pi}}$

$0 \leq r \leq 100\sqrt{\frac{63}{\pi}}$

c. The radius can range between 0 m and approximately 447.81 m.

Lesson 7.5: Quadratic Inequalities in Two Variables

- Page 496, #1b, 3, 4b, 5c, 7ac, and 10

Question 1, page 496

b. $y \leq -x^2 + 3x - 4$

Test (2, −2)

Left Side	Right Side
y	$-x^2 + 3x - 4$
-2	$-(2)^2 + 3(2) - 4$
	-2
LS > RS	

Test (4, −1)

Left Side	Right Side
-1	$-x^2 + 3x - 4$
	$-(4)^2 + 3(4) - 4$
	-8
LS > RS	

Test (0, −6)

Left Side	Right Side
-6	$-x^2 + 3x - 4$
	$-(0)^2 + 3(0) - 4$
	-4
LS < RS	

Test (−2, −15)

Left Side	Right Side
-15	$-x^2 + 3x - 4$
	$-(-2)^2 + 3(-2) - 4$
	-14
LS < RS	

The points (2, −2), (0, −6), and (−2, −15) satisfy the inequality, so they are solutions to the inequality.

ADLC Mathematics 20-1

147