Lesson 3.2: Operations with Radicals

Complete the *Practice* below. When you have completed all the questions for *Lesson 3.2 Practice – III* with your best work, mark your work by first comparing your answers to the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Practice – III

1. Simplify the following expressions by rationalizing the denominator.

   a. $\frac{2}{\sqrt{2}}$

   b. $\frac{6}{\sqrt[3]{4u}}$

c. $\dfrac{\sqrt{2}}{5\sqrt{7}}$

2. Simplify the following expressions by rationalizing the denominator.

a. $\dfrac{3}{\sqrt{2}-5}$

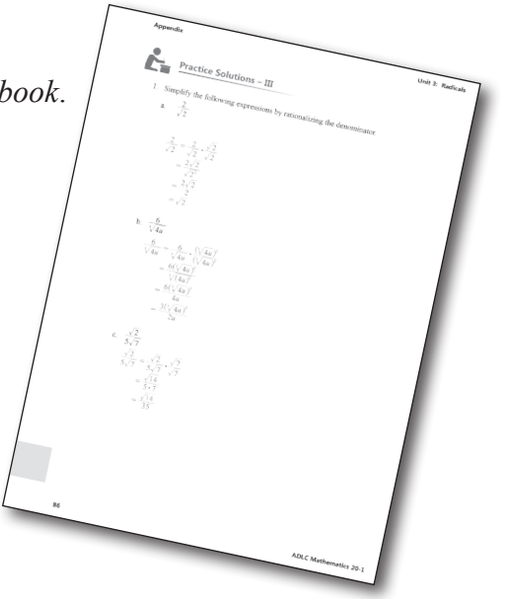
b. $\dfrac{7\sqrt{2}}{\sqrt{5}+\sqrt{6}}$

3. Identify and fix the error(s) in Portia's simplification of the expression $\dfrac{4\sqrt{5}-\sqrt{2}}{6-\sqrt{15}}$.

$$\frac{4\sqrt{5}-\sqrt{2}}{6-\sqrt{15}} \cdot \frac{6-\sqrt{15}}{6-\sqrt{15}} = \frac{24\sqrt{5}+\sqrt{30}}{36+15}$$

$$= \frac{24\sqrt{5}+\sqrt{30}}{51}$$

Mark your work for *Lesson 3.2 Practice – III* using the solutions provided in *Appendix 2: Solutions*. Then, apply the rubric found at the beginning of the *Workbook*.


Appendix

Practice Solutions – III

Unit 3: Radicals

1. Simplify the following expressions by rationalizing the denominator.

a. $\frac{2}{\sqrt{2}}$

$\frac{2}{\sqrt{2}} = \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$
$= \frac{2\sqrt{2}}{\sqrt{2^2}}$
$= \frac{2\sqrt{2}}{2}$
$= \sqrt{2}$

b. $\frac{6}{\sqrt{4a}}$

$\frac{6}{\sqrt{4a}} = \frac{6}{\sqrt{4a}} \cdot \frac{\sqrt{4a}}{\sqrt{4a}}$
$= \frac{6\sqrt{4a}}{\sqrt{4a^2}}$
$= \frac{6\sqrt{4a}}{4a}$
$= \frac{3\sqrt{4a}}{2a}$

c. $\frac{\sqrt{2}}{5\sqrt{7}}$

$\frac{\sqrt{2}}{5\sqrt{7}} = \frac{\sqrt{2}}{5\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}}$
$= \frac{\sqrt{14}}{5 \cdot 7}$
$= \frac{\sqrt{14}}{35}$

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

My self-assessed mark on *Lesson 3.2 Practice – III* is _____.

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

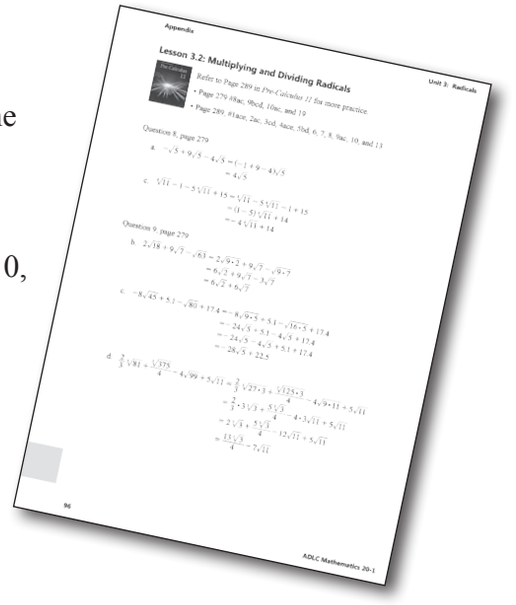
Question Number	Got it!	Almost there…	Need to retry or ask for help.	Similar questions from ***Pre-Calculus 11***
1				p. 290 #8
2				p. 290 #9ac, 10
3				p. 290 #13

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 279, #8ac, 9bcd, 10ac, and 19
- Page 289, #1ace, 2ac, 3cd, 4ace, 5bd, 6, 7, 8, 9ac, 10, and 13

Check your work in *Enhance Your Understanding*.


Appendix

Lesson 3.2: Multiplying and Dividing Radicals

Unit 3: Radicals

Refer to Page 289 in *Pre-Calculus 11* for more practice.

- Page 279, #8ac, 9bcd, 10ac, and 19
- Page 289, #1ace, 2ac, 3cd, 4ace, 5bd, 6, 7, 8, 9ac, 10, and 13

Question 8, page 279

a. $-\sqrt{5} + 9\sqrt{5} - 4\sqrt{5} = (-1 + 9 - 4)\sqrt{5}$
$= 4\sqrt{5}$

c. $\sqrt{11} - 1 - 5\sqrt{11} + 15 = \sqrt{11} - 5\sqrt{11} - 1 + 15$
$= (1 - 5)\sqrt{11} + 14$
$= -4\sqrt{11} + 14$

Question 9, page 279

b. $2\sqrt{18} + 9\sqrt{7} - \sqrt{63} = 2\sqrt{9 \cdot 2} + 9\sqrt{7} - \sqrt{9 \cdot 7}$
$= 6\sqrt{2} + 9\sqrt{7} - 3\sqrt{7}$
$= 6\sqrt{2} + 6\sqrt{7}$

c. $-8\sqrt{45} + 5.1 - \sqrt{80} + 17.4 = -8\sqrt{9 \cdot 5} + 5.1 - \sqrt{16 \cdot 5} + 17.4$
$= -24\sqrt{5} + 5.1 - 4\sqrt{5} + 17.4$
$= -24\sqrt{5} - 4\sqrt{5} + 5.1 + 17.4$
$= -28\sqrt{5} + 22.5$

d. $\frac{2}{3}\sqrt{81} + \frac{\sqrt{275}}{4} - 4\sqrt{99} + 5\sqrt{11} = \frac{2}{3}\sqrt{27 \cdot 3} + \frac{\sqrt{25 \cdot 3}}{4} - 4\sqrt{9 \cdot 11} + 5\sqrt{11}$
$= \frac{2}{3} \cdot 3\sqrt{3} + \frac{5\sqrt{3}}{4} - 4 \cdot 3\sqrt{11} + 5\sqrt{11}$
$= 2\sqrt{3} + \frac{5\sqrt{3}}{4} - 12\sqrt{11} + 5\sqrt{11}$
$= \frac{13\sqrt{3}}{4} - 7\sqrt{11}$

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