

MIAMI DADE COLLEGE  
 INTERAMERICAN CAMPUS  
 DEPARTMENT OF MATHEMATICS  
 MAT 0020  
 STUDY GUIDE  
 ROOTS AND RADICALS

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Simplify.

- 1)  $\sqrt{3} \cdot \sqrt{21}$   
 A)  $\sqrt{63}$                       B)  $9\sqrt{7}$                       C)  $3\sqrt{7}$                       D)  $\sqrt{7}$
- 2)  $2\sqrt{3} \cdot \sqrt{6} - 4\sqrt{75} \cdot \sqrt{6}$   
 A)  $-9\sqrt{2}$                       B)  $21\sqrt{2}$                       C)  $66\sqrt{2}$                       D)  $-54\sqrt{2}$
- 3)  $\sqrt{112}$   
 A) 28                              B)  $7\sqrt{4}$                       C) 10                              D)  $4\sqrt{7}$
- 4)  $\sqrt{2x^2} \cdot \sqrt{10x^4}$   
 A)  $2\sqrt{5x^6}$                       B)  $2x^6\sqrt{5}$                       C)  $2x^3\sqrt{5}$                       D)  $4x^3\sqrt{5}$
- 5)  $\sqrt[3]{27x^4y^5}$   
 A)  $3xy(\sqrt[3]{xy^2})$                       B)  $5xy(\sqrt[3]{xy^2})$                       C)  $3xy(\sqrt[2]{xy^2})$                       D)  $3xy(\sqrt[3]{xy})$
- 6)  $xy^2\sqrt{x^3y^7}$   
 A)  $x^1y^3\sqrt{xy}$                       B)  $x^1y^5\sqrt{xy}$                       C)  $x^2y^5\sqrt{xy}$                       D)  $x^2y^3\sqrt{xy}$
- 7)  $15s^5t\sqrt{72s^7t^7}$   
 A)  $90s^8t^3\sqrt{2st}$                       B)  $90s^{15}t^4\sqrt{2st}$                       C)  $90s^8t^4\sqrt{2st}$                       D)  $21s^8t^4\sqrt{2st}$

Find the product. Assume all variables have non-negative values.

- 8)  $\sqrt{6}(\sqrt{54} - \sqrt{6})$   
 A)  $18 - \sqrt{6}$                       B) 12                              C) 24                              D)  $6\sqrt{3} - 6$

Perform the indicated operation.

- 9)  $\sqrt{3a} - 5\sqrt{108a} + 2\sqrt{12a}$   
 A)  $-25\sqrt{3a}$                       B)  $-3\sqrt{3a}$                       C)  $-3\sqrt{123a}$                       D)  $-25\sqrt{123a}$
- 10)  $\sqrt{20t^9} + \sqrt{80t^9}$   
 A)  $6t^5\sqrt{5t}$                       B)  $6t^4\sqrt{5t}$                       C)  $6t^4\sqrt{5}$                       D)  $8t^4\sqrt{5t}$

Find the root. Assume all variables represent non-negative numbers.

- 11)  $\sqrt[4]{y^{12}}$   
 A)  $y^3$                               B)  $5y$                               C)  $y^5$                               D)  $y^{12}$

Find the following root if it exists.

12)  $-\sqrt{81}$

A) - 18

B) - 9

C) - 11

D) 40.5

Find the quotient. Assume all variables have positive values. Leave answer in simplest form.

13)  $\frac{6\sqrt{24x^9y^6}}{2\sqrt{3x^4y^2}}$

A)  $6x^2y^2\sqrt{3x}$

B)  $6x^2y^2\sqrt{2xy}$

C)  $4x^2y^2\sqrt{2x}$

D)  $6x^2y^2\sqrt{2x}$