

MIAMI DADE COLLEGE  
 INTERAMERICAN CAMPUS  
 DEPARTMENT OF MATHEMATICS  
 MAT 1033  
 STUDY GUIDE  
 RADICALS

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

Simplify the expression.

1)  $\sqrt{\frac{8}{27}} \cdot \sqrt{\frac{2}{3}}$

A)  $\sqrt{\frac{2}{3}}$

B)  $\frac{2}{3}$

C)  $\frac{4}{9}$

D)  $\frac{2}{\sqrt{3}}$

Simplify. Assume that all variables represent positive real numbers.

2)  $\sqrt{49m^{19}n^4}$

A)  $7m^9n^2$

B)  $7m^8n^2\sqrt{m}$

C)  $7m^{10}n^3$

D)  $7m^9n^2\sqrt{m}$

Simplify the expression. Assume that all variables represent positive real numbers.

3)  $\sqrt{6} \cdot \sqrt{3} - 4\sqrt{50}$

A)  $-17\sqrt{2}$

B)  $9 - 20\sqrt{2}$

C)  $-2\sqrt{2}$

D)  $6 - 20\sqrt{2}$

4)  $3\sqrt{27x^2z} + 7x\sqrt{75z}$

A)  $35x\sqrt{3z}$

B)  $(3\sqrt{27z} + 35\sqrt{3z})x$

C)  $44x\sqrt{3z}$

D)  $44\sqrt{3z}$

Rationalize the denominator.

5)  $\frac{4\sqrt{14}}{10\sqrt{5}}$

A)  $\frac{2\sqrt{70}}{5}$

B)  $\frac{2\sqrt{14}}{25}$

C)  $\frac{2\sqrt{70}}{25}$

D)  $\frac{2\sqrt{14}}{5}$

Rationalize the denominator and simplify.

6)  $\frac{3}{9 - \sqrt{5}}$

A)  $\frac{27 + 3\sqrt{5}}{-4}$

B)  $\frac{3}{9} - \frac{3}{\sqrt{5}}$

C)  $\frac{27 + 3\sqrt{5}}{76}$

D)  $\frac{27 - 3\sqrt{5}}{76}$

Solve the equation.

7)  $\sqrt{8q - 7} = 7$

A)  $\emptyset$

B)  $\{7\}$

C)  $\left\{\frac{21}{4}\right\}$

D)  $\{49\}$

8)  $\sqrt{p^2 - 3p + 36} = p + 3$

A)  $-3$

B)  $6$

C)  $\frac{-3}{2}$

D)  $3$

Simplify each expression by first writing it in radical form.

9)  $-32^{1/5}$

A) 32

B) 16

C) -8

D) -2

Solve the problem.

10) Which one of the following is equal to the given expression?

$81^{1/2}$

A)  $-\frac{81}{2}$

B)  $\frac{81}{2}$

C) 9

D) -9

Rationalize the denominator.

11)  $\frac{17}{\sqrt{11}}$

A)  $\frac{289}{11}\sqrt{11}$

B)  $17\sqrt{11}$

C) 138

D)  $\frac{17}{11}\sqrt{11}$

12)  $\sqrt{\frac{14p^3r}{7m}}$

A)  $p\sqrt{2pmr}$

B)  $\frac{\sqrt{2pmr}}{m}$

C)  $\frac{p\sqrt{2pmr}}{m}$

D)  $\frac{p\sqrt{2pmr}}{7m}$

Find the square root.

13)  $\sqrt{\frac{289}{36}}$

A) 3

B) 8

C)  $\frac{17}{6}$

D)  $\frac{17}{7}$

14)  $-\sqrt{36}$

A) -18

B) Not a real number

C) -6

D) 6

Find the length of the unknown side of a right triangle with legs a and b and hypotenuse c. Round to three decimal places, if necessary.

15)  $a = 9, b = 12$

A)  $c = 12$

B)  $c = 15$

C)  $c = 14$

D)  $c = 11$

Perform the indicated operation. Assume that all variables represent nonnegative real numbers.

16)  $\sqrt{2a} + 6\sqrt{50a} - 5\sqrt{8a}$

A)  $1\sqrt{60a}$

B)  $1\sqrt{2a}$

C)  $21\sqrt{60a}$

D)  $21\sqrt{2a}$

Simplify the expression by performing the indicated operations.

17)  $\sqrt{12} \cdot \sqrt{4} - 2\sqrt{75}$

A)  $16 - 10\sqrt{3}$

B)  $12 - 10\sqrt{3}$

C)  $-6\sqrt{3}$

D)  $-\sqrt{3}$

Perform the indicated operations and express the result in simplest form.

18)  $\sqrt{(-6 - 4)^2 + (3 - 7)^2}$

A)  $2\sqrt{5}$

B)  $4\sqrt{6}$

C)  $2\sqrt{26}$

D)  $2\sqrt{29}$

Simplify the radical expression. Assume that all variables represent nonnegative real numbers.

19)  $(\sqrt{7x} + 7)(\sqrt{6x} + 3)$

A)  $x\sqrt{42} + 3\sqrt{7x} + 7\sqrt{6x} + 21$

C)  $x\sqrt{42} + \sqrt{6x} + 21$

B)  $x\sqrt{42} + 21$

D)  $x\sqrt{6} + 21$

20)  $(2x - 4\sqrt{3})^2$

A)  $4x^2 - 16x\sqrt{3} + 144$

B)  $4x^2 + 48$

C)  $4x^2 - 16x\sqrt{3} + 48$

D)  $4x^2 + 144$