

MAT 0020 Basic Algebra II

KEY CONCEPT REVIEW

SECTIONS 8.1 AND 8.2

TO RECEIVE CREDIT, DO ALL PROBLEMS, MAKE CORRECTIONS, AND SHOW ALL WORK.

1) Why do all positive numbers have two square roots?

2) **Find the square roots of each number.**

- a) 81
b) 0.49

3) **Find each square root.**

- a) $-\sqrt{121}$
b) $\sqrt{\frac{9}{25}}$

4) State whether each number is "rational," "irrational" or "not real."

- a) $\sqrt{49}$
b) $\sqrt{-16}$
c) $-\sqrt{2}$

5) Why is the square root of a negative number not a real number?

6) Evaluate $\sqrt{x-5}$ for $x = 5$. Can $x = 0$? Explain why or why not.

7) **Find each square root.**

- a) $\sqrt{y^6}$
b) $\sqrt{(ab)^2}$

Simplify.

8) $\sqrt{(25x^2)^2}$

9) $-\sqrt{64x^8}$

10) $\sqrt{x^{20}y^{12}}$

11) $\sqrt{36m^{16}n^6}$

12) When is a radical expression simplified?

13) How is the product rule used to simplify a radical expression?

14) What mistake was made in the calculations shown below?

$$\sqrt{72} = \sqrt{9}\sqrt{8} = 3\sqrt{8}$$

Use the product rule to simplify the radical.

15) $\sqrt{60}$

16) $\sqrt{75}$

A) $\sqrt{75}$

B) $25\sqrt{3}$

C) $3\sqrt{5}$

D) $5\sqrt{3}$

17) $5\sqrt{18}$

Use the product and quotient rules to simplify the radical.

18) $-\sqrt{\frac{36}{121}}$

19) $\sqrt{\frac{12}{25}}$

20) $\sqrt{\frac{27}{81}}$

Simplify each radical.

21) $\sqrt{y^{11}}$

22) $\sqrt{28p^2q}$

23) $\sqrt{98m^3n^5}$

- A) $mn\sqrt{98m^2n^4}$
- B) $7mn^2\sqrt{2mn}$
- C) $2mn\sqrt{7mn^2}$
- D) $49m^2n^4\sqrt{2mn}$

Simplify each radical

24) $\sqrt{\frac{x^7}{16}}$

25) $\sqrt{\frac{3x}{48x}}$

26) $\sqrt{\frac{32x^2y}{49}}$

A) $16x\sqrt{2y}$

B) $x\sqrt{\frac{32y}{7}}$

C) $\frac{4x\sqrt{2y}}{7}$

D) $\frac{4\sqrt{2x^2y}}{7}$

27) $\sqrt{\frac{24a^2b}{c^2}}$

A) $\frac{2\sqrt{6a^2b}}{c}$

B) $\frac{a\sqrt{24b}}{c}$

C) $\frac{4a\sqrt{6b}}{c}$

D) $\frac{2a\sqrt{6b}}{c}$