Transitions to College Math
Chapter 1 Review

Name: Key
Date: _____ Period: _____

SHOW ALL WORK!

For questions #1-3, indicate whether each of the following statements are True or False.

1. True or False? $10 \notin \{5,7,9\}$

2. True or False? $\{4,5\} \subset \{4,6,8\}$

3. True or False? $\{4,5,6,7,8\} \subset \{4,6,8\}$

4. Divide

$[(0+6)\div 24]^{-1} = [6\div 24]^{-1} = \left(\frac{6}{24}\right)^{-1} = \frac{24}{6} = 4$

Select the correct answer and write it in the blank provided.

5. Which property of the real numbers is illustrated by the following statement?

$6(xy+z) = 6xy+6z$

A) Commutative property of multiplication
B) Associative property of addition
C) Associative property of multiplication
D) Distributive property

6. Which property of the real numbers is illustrated by the following statement?

$y+(-y) = 0$

A) Commutative property of multiplication
B) Associative property of addition
C) Additive inverse property
D) Additive identity property

7. Which property of the real numbers is illustrated by the following statement?

$3y+2y = 2y+3y$

A) Commutative property of multiplication
B) Commutative property of addition
C) Associative property of addition
D) Associative property of multiplication

Use the following to answer questions 8-11:

$$S=\left\{-\sqrt{5},-1,\frac{1}{2},0,2,\sqrt{7},6,\sqrt{\frac{625}{9}},\pi\right\}$$

8. List the subset of S consisting of natural numbers.

$\{2, 6\}$

9. List the subset of S consisting of integers.

$\{-1, 0, 2, 6\}$

10. List the subset of S consisting of rational numbers.

$\{-1, \frac{1}{2}, 0, 2, 6, \sqrt{\frac{625}{9}}\}$

11. List the subset of S consisting of irrational numbers.

$\{-\sqrt{5}, \sqrt{7}, \pi\}$

12. Evaluate $-3^0 = 1$

13. Evaluate $27^{\frac{2}{3}} = \sqrt[3]{27^2} = (\sqrt[3]{27})^2 = 3^2 = 9$

14. Evaluate $5^{-3} = \frac{1}{5^3} = \frac{1}{125}$

15. Evaluate $1^{-4}+5^{-1} = \frac{1}{1^4} + \frac{1}{5}$

$= \frac{1}{1} + \frac{1}{5}$

$= \frac{5}{5} + \frac{1}{5} = \frac{6}{5}$

16. Evaluate $\sqrt[3]{-64} = -4$

$-4 \cdot -4 \cdot -4$

17. Write in radical form. Do not simplify

$(4x)^{\frac{3}{4}} = \sqrt[4]{(4x)^3}$

18. Write in rational exponent form. Do not simplify.

$-\sqrt{191} = -191^{\frac{1}{2}}$

19. Simplify and express your answer using positive exponents only.

$\left(2a^{-4}b^{6}\right)^{-5} = 2^{-5}a^{20}b^{-30} = \dfrac{a^{20}}{32b^{30}}$

20. Simplify and express your answer using positive exponents only.

$\left(2a^{-4}b^{6}\right)\left(3a^{6}b\right) = 6a^{-4+6}b^{6+1}$

$= 6a^{2}b^{7}$

21. Simplify and express your answer using positive exponents only.

$\dfrac{24a^{-1}b^{7}c^{2}}{6a^{-3}bc^{2}} = \dfrac{4a^{3}b^{6}}{a} = 4a^{2}b^{6}$

20. Rationalize the denominator.

$\dfrac{12}{\sqrt{13}+4} \cdot \dfrac{\sqrt{13}-4}{\sqrt{13}-4} = \dfrac{12\sqrt{13}-48}{13-16} = \dfrac{12\sqrt{13}-48}{-3} = -4\sqrt{13}+16$