Date Completed: _____
Mentor Initials: _____

Exponents and Radicals (Basic)

1. Which of the following expressions is equivalent to $a^{3/4}$?

A. $\sqrt[4]{a}$
B. $\sqrt[3]{a}$
C. $a\sqrt[3]{a}$
D. $\sqrt[4]{a^3}$
E. $a\sqrt{a}$

2. Which value of y makes the equation below true?

$$\frac{16^y}{4^2} = 4^6$$

A. 4
B. 8
C. 12
D. 16
E. 256

3. Which of the following is equivalent to $a^{4/3}$?

A. $\sqrt[4]{a}$
B. $\sqrt[3]{a}$
C. $a\sqrt[3]{a}$
D. $\sqrt[4]{a^3}$
E. $a\sqrt{a}$

4. $3x^6 \cdot 5x^7$ is equivalent to:

A. $8x^2$
B. $8x^{13}$
C. $8x^{42}$
D. $15x^{13}$
E. $15x^{35}$

5. Given $m = 20n^4 + 40$, which of the following is an expression for n in terms of m?

A. $(\frac{m}{20} + 2)^{\frac{1}{4}}$
B. $(\frac{m}{20} - 2)^{\frac{1}{4}}$
C. $m^4 + 2$
D. $20m^4 + 40$
E. $\frac{1}{20}(m - 40)^{\frac{1}{4}}$

6. For all $b \neq 0$, $\frac{b^{10}}{b^5}$ is equivalent to:

A. 1

B. b^2

C. b^5

D. b^{15}

E. b^{50}

7. Which of the following is equivalent to $\sqrt{s} * s^{\frac{2}{3}}$?

A. $s^{\frac{1}{3}}$

B. $s^{\frac{2}{3}}$

C. $s^{\frac{3}{5}}$

D. s

E. $s^{\frac{7}{6}}$

8. If $\frac{n^9}{n^6} = 27$, what is the value of n?

A. 1
B. 2
C. 3
D. 9
E. 27

9. For what value of c is the equation $3^{3c+6} = 3^{18}$ true?

A. 3
B. 4
C. 6
D. 9
E. 16

10. If $\frac{12^3}{6^3} = 4 + x$, what is the value of x?

A. -2
B. 1
C. 2
D. 4
E. 8

11. Which of the following is equivalent to the sum of the $4a^2 + a$ and $2a^{\frac{1}{2}} + 3a$?

A. $4a^2 + 4a$
B. $4a^2 + 2\sqrt{a} + 4a$
C. $4a^2 + 4a + \sqrt{2a}$
D. $16a^2 + 4a + \sqrt{2}a$
E. $16a^2 + 4a + \sqrt{2a}$

12. $(4x^4 - 3x)(x^4 + 5x)$

Which of the following is equivalent to the expression above?

A. $3x^4 - 8x$
B. $5x^4 + 2x$
C. $4x^8 - 15x^2$
D. $4x^8 + 17x^5 - 15x^2$
E. $5x^8 + 17x^5 - 15x^2$

13. If $\sqrt{x} + \sqrt{16} = \sqrt{81}$, what is the value of x?

A. 4
B. 5
C. 9
D. 25
E. 65

14. Which of the following is equivalent to $(36x^2)^{\frac{1}{2}}$?

A. 6|x|
B. 6x
C. 18|x|
D. $\sqrt{18x}$
E. 36x

15. $4x^0 \cdot 3x^{-7}$ is equivalent to:

A. $\frac{3}{x^7}$
B. $\frac{7}{x^7}$
C. 7
D. $\frac{12}{x^7}$
E. 12