Gateway Exam #1 Practice Problems
Laws of Exponents

1. If x is a positive quantity, the expression $\sqrt{\frac{x^{10}}{x^8}}$ could be simplified to:

   (a) x^{-2}
   (b) x^2
   (c) x^{18}
   (d) x^9
   (e) x

2. The expression $(a^2)^3$ could be simplified to:

   (a) a^6
   (b) a^5
   (c) $a^{2/3}$
   (d) $a^{3/2}$
   (e) a^{-1}

3. If b is a positive quantity, the expression $\frac{b}{\sqrt{b}}$ could be simplified to:

   (a) b^2
   (b) $b^{1/2}$
   (c) b
   (d) $b^{3/2}$
   (e) The given expression cannot be simplified any further.

4. The expression $\sqrt[3]{u^{18}}$ could be simplified to:

   (a) u^9
   (b) u^{54}
   (c) u^{27}
   (d) u^6
   (e) u^{15}

5. The expression $\frac{3}{x^2}$ could be simplified to:

   (a) $3 + x^2$
   (b) $(3x)^{-2}$
   (c) $3x^{-2}$

(d) 9

(e) $\left(\frac{3}{x}\right)^2$

6. The expression $\frac{w^{10}}{w^9}$ could be simplified to:

(a) $w^{10/9}$

(b) w^{19}

(c) $10w^9$

(d) w^{-1}

(e) w

7. The expression $\left(\frac{a^2}{b}\right)^4$ could be simplified to:

(a) $\frac{a^2}{b^4}$

(b) $\frac{a^6}{b}$

(c) $\frac{a^8}{b}$

(d) $\frac{a^6}{b^4}$

(e) $\frac{a^8}{b^4}$

8. The expression $(a^2b)^5$ could be simplified to:

(a) $a^{10}b^5$

(b) a^2b^5

(c) a^7b

(d) a^7b^5

(e) $a^{10}b$

9. The expression $x^{10}x^3$ could be simplified to:

(a) x^{30}

(b) x^{13}

(c) x^7

(d) $x^{10/3}$

(e) The given expression cannot be simplified further.

10. The expression $b^4\frac{b^2}{b^{10}}$ could be simplified to:

(a) b^{16}

(b) $b^{0.6}$

(c) b^{-8}

(d) b^{-4}

(e) b^{14}

11. The expression $a^0\sqrt{a}$ could be simplified to:

(a) $a^{1/2}$

(b) a^2

(c) a

(d) $a^{-1/2}$

(e) 0

12. The expression $\dfrac{\sqrt[3]{b}}{a^0}$ could be simplified to:

(a) $\left(\dfrac{b}{a}\right)^{1/3}$

(b) $\left(\dfrac{b}{a}\right)^{3}$

(c) $b^{1/3}$

(d) More information on a and b is needed in order to simplify the given expression any further.

(e) The given expression cannot be simplified because it is undefined.

13. If x is a positive quantity, the expression $\sqrt[4]{\dfrac{1}{x}}$ could be simplified to:

(a) $4x^{-1/2}$

(b) x^{-4}

(c) $4x$

(d) $\dfrac{4}{x}$

(e) $x^{-1/4}$

14. The expression $(\sqrt[3]{u})^9$ could be simplified to:

(a) $u^{1/3}$

(b) u^3

(c) $u^{9/2}$

(d) $3u^{9/2}$

(e) u^{27}

15. The expression $(a^{-4})^4$ could be simplified to:

(a) a^0

(b) 1

(c) a^8

(d) a^{-16}

(e) a^{-8}

Answers:

1.	e	2.	a	3.	b	4.	d	5.	c
6.	e	7.	e	8.	a	9.	b	10.	d
11.	a	12.	c	13.	e	14.	b	15.	d