January Exam Review - Unit 2

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Write the base of $-(-6)^3$. *(without calculator)*
a. 6 b. –6 c. -6×3 d. 3

____ 2. Evaluate: 6^5
a. 30 b. 7776 c. 15 625 d. 11

____ 3. Evaluate: -4^4 *(without calculator)*
a. –256 b. –16 c. 16 d. 256

____ 4. Evaluate: $(-5)^7$
a. –35 b. 35 c. 78 125 d. –78 125

____ 5. Which answer is negative? *(without calculator)*
i) $(-7)^8$
ii) $-(7)^8$
iii) $-(-7)^8$
a. i and ii b. i and iii c. ii and iii d. i only

____ 6. Which power is positive? *(without calculator)*
i) $(6)^5$
ii) $(-6)^5$
iii) $-(6)^5$
iv) $-(-6)^5$
a. i and iv b. iii and iv c. i, ii, and iv d. i and ii

____ 7. Evaluate: -8^0 *(without calculator)*
a. 1 b. –1 c. 0 d. 8

____ 8. Evaluate: $(-13)^0$ *(without calculator)*
a. 0 b. 1 c. –13 d. –1

____ 9. Evaluate: $(-10^3)^0$ *(without calculator)*
a. 1 b. –1 c. -30 d. 30

____ 10. Evaluate: $6^5 - 3^3$
a. 6561 b. 9 c. 7749 d. 21

____ 11. Evaluate: $(5^3 - 4^2)^0 - (6^2 - 8^0)$ *(without calculator)*
a. –34 b. –35 c. –36 d. 73

____ 12. Evaluate: $(3+4)^2 - (2-4)^3$
a. –31 b. 57 c. 20 d. 41

____ 13. Which expression has a value of 0? *(without calculator)*

i) $-(-5)^0 + 2 \times (-3)^0 - (-2)^0$

ii) $(5 \times 3)^0 - (3 - 2)^2 + (4 - 3)^0$

iii) $3 - (2 \div 2)^2 - (-4)^0$

iv) $(4 \times 2 \div 4) - (3^2 - 5^2)^0 - (-5)^0$

a. i, ii, and iv b. ii and iii c. i, iii, and iv d. i and iv

____ 14. Write the product of $5^3 \times 5^4$ as a single power. *(without calculator)*

a. 5^7 b. 5^{12} c. 10^7 d. 25^7

____ 15. Write the product of $(-7)^7 \times (-7)^3$ as a single power. *(without calculator)*

a. $(-7)^{10}$ b. $(-14)^{10}$ c. 49^{10} d. $(-7)^{21}$

____ 16. Write the quotient of $\frac{6^{10}}{6^5}$ as a single power. *(without calculator)*

a. 6^5 b. 6^{15} c. 6^2 d. 2

____ 17. Write the quotient of $(-8)^{15} \div (-8)^5$ as a single power. *(without calculator)*

a. 3 b. $(-8)^{20}$ c. $(-8)^3$ d. $(-8)^{10}$

____ 18. Express $\frac{(-5)^9 \times (-5)^6}{(-5)^3}$ as a single power. *(without calculator)*

a. $(-5)^5$ b. $(-5)^{51}$ c. $(-5)^{12}$ d. $(-5)^{18}$

____ 19. Evaluate: $(-7)^6 \div (-7)^6$ *(without calculator)*

a. 0 b. –7 c. 1 d. –1

____ 20. Evaluate: $\frac{(5)^8 \times (5)^6}{(5)^{12}}$ *(without calculator)*

a. 10 b. 4 c. 2 d. 25

____ 21. Evaluate: $(-2)^5 \times (-2)^3 \div (-2)^0$ *(without calculator)*

a. –128 b. –256 c. 256 d. –32 768

____ 22. Which expressions have positive values? *(without calculator)*

i) $\left[(-5)^2\right]^7$

ii) $\left[-(-5)^2\right]^7$

iii) $-\left(5^2\right)^7$

iv) $-\left[-(-5)^2\right]^7$

a. ii and iv b. ii and iii c. i and ii d. i and iv

____ 23. Which expressions have negative values? *(without calculator)*

i) $\left[-(-3)^5\right]^5$

ii) $\left(-3^5\right)^5$

iii) $\left[(-3)^5\right]^5$

iv) $-\left[(-3)^5\right]^5$

a. ii and iii b. i and ii c. i and iv d. iii and iv

Short Answer

24. Which answers are positive?

i) $(5)^3$

ii) $(-7)^6$

iii) $(-3)^7$

iv) $-(6)^3$

25. Evaluate: $\dfrac{5^3 \times (2+4)^2 \times 6(-9)^0}{-(4)^0 \times 6^3 \times (7-2)^2}$

26. Simplify, then evaluate.

$$\frac{(-2)^6 \times (-2)^2}{(-2)^3 \times (-2)^0}$$

27. Simplify, then evaluate.

$$\frac{\left(2^4\right)^3 \times \left(2^2\right)^4}{\left(2^4 \times 2^4\right)^2}$$

28. Simplify, then evaluate.

$$\left(4^6 \div 4^3\right)^2 - \left(2^8 \div 2^6\right)^2$$

29. Simplify, then evaluate.

$$\left[(-2)^4 \times (-2)^3\right] - \left[(-3)^4 \div (-3)^3\right]$$

Problem

Evaluate: $\dfrac{(15)^2 - (6)^2}{(9)^2 - 2(3)^2}$ Show your calculations.

January Exam 2011 Review - Unit 2
Answer Section

MULTIPLE CHOICE

1. ANS: B PTS: 1 DIF: Easy REF: 2.1 What Is a Power?
   LOC: 9.N1 TOP: Number KEY: Conceptual Understanding
2. ANS: B PTS: 1 DIF: Moderate REF: 2.1 What Is a Power?
   LOC: 9.N1 TOP: Number KEY: Procedural Knowledge
3. ANS: A PTS: 1 DIF: Moderate REF: 2.1 What Is a Power?
   LOC: 9.N1 TOP: Number KEY: Procedural Knowledge
4. ANS: D PTS: 1 DIF: Moderate REF: 2.1 What Is a Power?
   LOC: 9.N1 TOP: Number KEY: Procedural Knowledge
5. ANS: C PTS: 1 DIF: Moderate REF: 2.1 What Is a Power?
   LOC: 9.N1 TOP: Number KEY: Conceptual Understanding
6. ANS: A PTS: 1 DIF: Moderate REF: 2.1 What Is a Power?
   LOC: 9.N1 TOP: Number KEY: Conceptual Understanding
7. ANS: B PTS: 1 DIF: Easy
   REF: 2.2 Powers of Ten and the Zero Exponent LOC: 9.N1
   TOP: Number KEY: Procedural Knowledge
8. ANS: B PTS: 1 DIF: Easy
   REF: 2.2 Powers of Ten and the Zero Exponent LOC: 9.N1
   TOP: Number KEY: Procedural Knowledge
9. ANS: A PTS: 1 DIF: Moderate
   REF: 2.2 Powers of Ten and the Zero Exponent LOC: 9.N1
   TOP: Number KEY: Procedural Knowledge
10. ANS: C PTS: 1 DIF: Moderate
    REF: 2.3 Order of Operations with Powers LOC: 9.N1
    TOP: Number KEY: Procedural Knowledge
11. ANS: A PTS: 1 DIF: Moderate
    REF: 2.3 Order of Operations with Powers LOC: 9.N1
    TOP: Number KEY: Procedural Knowledge
12. ANS: B PTS: 1 DIF: Moderate
    REF: 2.3 Order of Operations with Powers LOC: 9.N1
    TOP: Number KEY: Procedural Knowledge
13. ANS: D PTS: 1 DIF: Difficult
    REF: 2.3 Order of Operations with Powers LOC: 9.N1
    TOP: Number KEY: Procedural Knowledge
14. ANS: A PTS: 1 DIF: Easy REF: 2.4 Exponent Laws I
    LOC: 9.N2 TOP: Number KEY: Procedural Knowledge
15. ANS: A PTS: 1 DIF: Easy REF: 2.4 Exponent Laws I
    LOC: 9.N2 TOP: Number KEY: Procedural Knowledge
16. ANS: A PTS: 1 DIF: Easy REF: 2.4 Exponent Laws I
    LOC: 9.N2 TOP: Number KEY: Procedural Knowledge
17. ANS: D PTS: 1 DIF: Easy REF: 2.4 Exponent Laws I
    LOC: 9.N2 TOP: Number KEY: Procedural Knowledge
18. ANS: C PTS: 1 DIF: Moderate REF: 2.4 Exponent Laws I
    LOC: 9.N2 TOP: Number KEY: Procedural Knowledge

19. ANS: C PTS: 1 DIF: Moderate REF: 2.4 Exponent Laws I
LOC: 9.N2 TOP: Number KEY: Procedural Knowledge
20. ANS: D PTS: 1 DIF: Moderate REF: 2.4 Exponent Laws I
LOC: 9.N2 TOP: Number KEY: Procedural Knowledge
21. ANS: C PTS: 1 DIF: Moderate REF: 2.4 Exponent Laws I
LOC: 9.N2 TOP: Number KEY: Procedural Knowledge
22. ANS: D PTS: 1 DIF: Moderate REF: 2.5 Exponent Laws II
LOC: 9.N2 TOP: Number KEY: Conceptual Understanding
23. ANS: A PTS: 1 DIF: Moderate REF: 2.5 Exponent Laws II
LOC: 9.N2 TOP: Number KEY: Conceptual Understanding

SHORT ANSWER

24. ANS:
The answers for i and ii are positive.

PTS: 1 DIF: Moderate REF: 2.1 What Is a Power?
LOC: 9.N1 TOP: Number KEY: Conceptual Understanding

25. ANS:
–5

PTS: 1 DIF: Difficult REF: 2.3 Order of Operations with Powers
LOC: 9.N1 TOP: Number KEY: Procedural Knowledge

26. ANS:
$(-2)^5 = -32$

PTS: 1 DIF: Moderate REF: 2.4 Exponent Laws I
LOC: 9.N2 TOP: Number KEY: Procedural Knowledge

27. ANS:
$$\frac{\left(2^4\right)^3 \times \left(2^2\right)^4}{\left(2^4 \times 2^4\right)^2} = \frac{2^{20}}{2^{16}} = 2^4 = 16$$

PTS: 1 DIF: Moderate REF: 2.5 Exponent Laws II
LOC: 9.N2 TOP: Number KEY: Procedural Knowledge

28. ANS:
$$\left(4^6 \div 4^3\right)^2 - \left(2^8 \div 2^6\right)^2 = \left(4^3\right)^2 - \left(2^2\right)^2 = 4^6 - 2^4 = 4080$$

PTS: 1 DIF: Moderate REF: 2.5 Exponent Laws II
LOC: 9.N2 TOP: Number KEY: Procedural Knowledge

29. ANS:
$$\left[(-2)^4 \times (-2)^3\right] - \left[(-3)^4 \div (-3)^3\right] = (-2)^7 - (-3)^1 = -125$$

PTS: 1 DIF: Moderate REF: 2.5 Exponent Laws II
LOC: 9.N2 TOP: Number KEY: Procedural Knowledge

PROBLEM

30. ANS:

$$\frac{(15)^2 - (6)^2}{(9)^2 - 2(3)^2}$$

$$= \frac{225 - 36}{81 - 18}$$

$$= \frac{189}{63}$$

$$= 3$$

PTS: 1 DIF: Moderate REF: 2.3 Order of Operations with Powers
LOC: 9.N1 TOP: Number KEY: Problem-Solving Skills | Communication