The following problems are examples of the types of problems you may see on the NON-CALCULATOR section of Exam 1. This is NOT all the possible problems. You also need to study other exam review handouts, your notes, old quizzes, and your HW assignments.

1. Arithmetic with signed rational numbers: Evaluate each expression. Answers should be reduced fractions when applicable.
   a. $6 + (-4)$  
   b. $19 - 35$  
   c. $-6\frac{1}{3} + 9\frac{2}{3}$  
   d. $-6 - (-14)$  
   e. $-18 + 4$  
   f. $\lvert -\frac{2}{3} \rvert$  
   g. $\lvert -4 - 8 \rvert$  
   h. $\lvert 7 - \frac{21}{4} \rvert$  
   i. $-48 \div 6$  
   j. $(-3)(-4)$  
   k. $(2)(-5)(-3)$

2. Evaluating expressions (including exponential expressions): Evaluate each expression. Answers should be reduced fractions when applicable.
   a. $-4 + 6 \cdot 2$  
   b. $\frac{8+4}{7-3}$  
   c. $(-4)^2$  
   d. $40 \div 4 \cdot 2$  
   e. $6 \lvert 7 - 4 \cdot 3 \rvert$  
   f. $(4 - 6)^2$

2. Simplifying expressions (including exponential expressions): Simplify each expression.
   a. $2(x - 4)$  
   b. $-3x + 7 - 4x$  
   c. $x^3 x^5$  
   d. $(x^2)^4$  
   e. $(2x)^3$  
   f. $x^7(3x^2 + 4x)$

Solutions

1. a. 2  
   b. -16  
   c. $\frac{46}{13}$  
   d. 8  
   e. -14  
   f. $\frac{2}{3}$  
   g. 12  
   h. $\frac{19}{4}$  
   i. -8  
   j. 12  
   k. 30

2. a. 8  
   b. 3  
   c. -4  
   d. 20  
   e. 30  
   f. 4

3. a. $2x - 8$  
   b. $-7x + 7$  
   c. $x^8$  
   d. $x^8$  
   e. $8x^3$  
   f. $3x^5 + 4x^4$
These are examples of the types of problems you may see on the CALCULATOR section of Exam 1. Remember, every type of problem may not be covered on the review, so you should also study notes, homework, class practice problems, and quizzes.

Evaluate the following arithmetic or algebraic expressions. Answers should be reduced fractions, if applicable.

1. \(8 + \frac{12}{3}\)  
2. \(\frac{2(x+1)}{6-2}\)  
3. \(3[4(8 - 2) + 5]\)  
4. \([-2(3) + 4]\)

5. \((x - 3)^2\) for \(x = 1\)  
6. \(-x^2\) for \(x = 2\)  
7. \(2|3 - x|\) for \(x = -5\)  
8. \(2x^2 + 1\) for \(x = 4\)

Simplify the following algebraic expressions.

9. \(-2x + 3x\)  
10. \(6x - 1 + 3x\)  
11. \(3 + 2x + 5x + 2\)  
12. \(9x - 4\)

13. \(6x + 3 - x + 1\)  
14. \(3(x + 2)\)  
15. \(- (3x - 4)\)  
16. \(-2(x + 5) - 3\)

17. \(4(3x + 1) - 2(x + 3)\)

Determine whether the given number is a solution to the given equation. Answers should be reduced fractions. Remember to interpret your solution by stating whether or not it is a solution.

18. \(-\frac{5}{9}(x - 29) = 30; -25\)  
19. \(3x = 2(x - 1) + 4; \frac{3}{2}\)

20. \(x + \frac{3}{4} = 2x - \frac{7}{8}; 1\frac{5}{8}\)

Simplify each expression using the properties of exponents. If the base is a number, evaluate the problem at the end.

21. \((x^2)^3\)  
22. \(4^2 \cdot 4^3\)  
23. \((3x)(2x^4)\)  
24. \((x^4)^5\)

25. \((-2xy^5)^3\)  
26. \(4x^3 + 5x^2 - 6x^3\)  
27. \(2x(3x - 7) + 8x^2\)
Word Problems

28. Althea paid $5.00 each for two bracelets and later sold each for $15.00. She paid $8.00 each for three bracelets and sold each of them for $9.00.
   a. Write an expression that represents the profit Althea made.
   b. Evaluate the expression and interpret the result. Write your answer in a complete sentence.

29. The Ross family recently dined at an Italian restaurant. Each of the four family members ordered a pasta dish that cost $11.50, a drink that cost $1.50, and dessert that cost $2.75.
   a. Write an expression that could be used to calculate the cost of the Ross’ dinner before adding tax and a tip.
   b. What was the cost of dining out for the Ross family before adding tax and tip? Write your answer in a complete sentence.

30. An airplane can travel at a speed of 550 miles per hour. Write and solve an equation to find the time it will take to fly from London to Montreal, a distance of approximately 3300 miles. Write your answer in a complete sentence and define any variables you use.

Solutions

1. 12
2. \( \frac{5}{2} \)
3. 87
4. 2
5. 4
6. -4
7. 16
8. 33
9. \( x \)
10. 9\( x - 1 \)
11. 7\( x + 5 \)
12. Already Simplified
13. 5\( x + 4 \)
14. 3\( x + 6 \)
15. -3\( x + 4 \)
16. -2\( x - 13 \)
17. 10\( x - 2 \)
18. Yes a solution
19. Not a Solution
20. Yes a Solution
21. \( x^6 \)
22. \( 4^5 = 1024 \)
23. \( 6x^5 \)
24. \( 3x^{20} \)
25. \( -8x^3y^{15} \)
26. \( -2x^3 + 5x^2 \)
27. 14\( x^2 - 14x \)

28. a. \( (2 \cdot 15 + 3 \cdot 9) - (2 \cdot 5 + 3 \cdot 8) \)
b. 23; She made a $23 profit.

29. a. \( 4(11.5 + 1.5 + 2.75) \)
b. The meal cost $63 before adding tax and tip.

30. \( 3300 = 550t \)
It will take 6 hours to fly from London to Montreal. The variable “t” represents the time it will take to make that flight.