Part 1 (No Calculator) The following questions must be answered without the use of a calculator. Show work when possible.

**Evaluating Expressions**
Evaluate each expression. Where appropriate, answers should be written as reduced fractions.

1. \(-4 + 6\) + 1
2. \(\frac{1}{3}(x - 2) + 6; x = 7\)
3. \(\frac{2(x+1)}{x-2}; x = 4\)
4. \(-3^2\)

5. \(5x - 7y; x = -\frac{3}{4}, y = -\frac{2}{3}\)
6. \(3x - y^2; x = -4, y = -3\)

**Simplifying Expressions**
Simplify each expression. If an expression is already simplified, so state.

1. \(8u + 2u - 3u\)
2. \(-2(\frac{3}{14} x + 6)\)
3. \((x^4)^3\)
4. \(-x^3 + 4x^2 + \frac{2}{3}x^3\)

5. \(9 - t - 3(t + 3)\)
6. \(4(y - 3) + 9 - 3y\)
7. \((\frac{3}{x^2})(5x)\)

8. \((3x^2y)^3\)
Part 2 (Calculator) The following questions may be answered with a calculator. Show work whenever possible.

**Determining Solutions**
Determine whether the given number is a solution to the given equation.

1. $5(4x - 8) = 0; \ x = 2$
2. $\frac{2}{3}(3 + x) = 2x + \frac{17}{4}; \ x = -3$

**Real Numbers**

1. Use the set of numbers to answer the questions.
   
   \[
   \{-\frac{24}{6}, \ -\sqrt{5}, \ 0, \ 0.5, \ 3, \ \frac{26}{4}, \ \sqrt{100}\}
   \]

   a. List all the numbers from the set that are natural numbers.

   b. List all the numbers from the set that are rational numbers.
Word Problems

1. Gabriel pays $40 a month for basic cell phone service. In addition, Gabriel can send text messages for $0.20 each.
   a. Define variables using complete sentences.
   b. Write an equation to find the total amount Gabriel spends in a given month.
   c. Use the equation to calculate Gabriel’s bill if he sends 45 text messages this month. Answer in a complete sentence.

2. Ann is planning a business trip for which she needs to rent a car. The car rental company charges $36 per day plus $.50 per mile over 100 miles. Suppose Ann rents the car for 5 days and drives 180 miles.
   a. Write an expression to determine how much she must pay the car rental company.
   b. Evaluate the expression. Write your solution in a complete sentence.
Solutions

Evaluation Expressions

1. 3  2. \( \frac{23}{3} \)  3. 5  4. -9  5. \( \frac{11}{12} \)  6. -21

Simplifying Expressions

1. 7u  2. \( -\frac{3}{7}x - 12 \)  3. \( x^{\frac{1}{2}} \)  4. \( -\frac{1}{3}x^3 + 4x^2 \)  5. \( -4t \)

6. \( y - 3 \)  7. \( \frac{2}{13}x^3 \)  8. \( 27x^6y^3 \)

Determining Solutions

1. Yes, \( x = 2 \) is a solution.
2. No, \( x = -3 \) is not a solution.

Real Numbers

1. a. 3, \( \sqrt{100} \)  b. \( \frac{-24}{6}, 0, 0.5, 3, \frac{26}{4}, \sqrt{100} \)

Word Problems

1. a. \( t \) represents the number of text messages in a month
   a represents the amount of a month's bill in $.

b. \( a = 40 + .2t \)

c. His bill will be $49 if he sends 45 text messages this month.

2. a. \( 5 \cdot 36 + .50(180 - 100) \)

b. She will have to pay $220.