

Instructions: Put all answers on the homework sheet and attach pages to show work. All work must be shown to receive credit. All answers must be exact unless otherwise indicated. Simplify answers as much as possible even if not specifically noted.

1. Complete the following problems *in your calculator*. On your page of work, give the exact commands entered into your calculator.
- a. Convert to a fraction: 0.26086956521739

b.
$$\frac{12 - \sqrt{(-12)^2 - 4 \cdot 7 \cdot 5}}{2 \cdot 7}$$

c.
$$\frac{3 \left| \frac{1}{2} \cdot 9 - 5 \right| + 1}{4 \cdot \frac{11}{5}}$$

2. Evaluate the following expressions for $x = -2$, $y = 4$, $z = -3$, $a = 7$, $b = -1$
- a. $9.8z$

b. yz

c.
$$\frac{-5(a-b)}{3a^2 + y} - b$$

d. $|xyz - 5| - x$

e. $x^2 + 2x - 8$

3. Use the abbreviations for the sets of numbers $\mathbb{N}, \mathbb{Z}, \mathbb{Q}, \mathbb{I}, \mathbb{R}$ to indicate which set (if any) that each of the numbers below belongs to. List all possible sets. If the number does not belong to any of the above sets, list none.

a. -11

b. $\frac{1}{2}$

c. 12

d. $\sqrt{-4}$

e. zero

f. $\frac{\pi}{3}$

4. Determine which elements belong to the specified set below. Put your answer in set notation.

$$\left\{ 0, \frac{3}{2}, \pi, \sqrt{5}, |-2|, 7, \frac{10}{2}, -11, \frac{9}{0}, 0.\overline{142857}, 2.11, \frac{1}{\sqrt{3}} \right\}$$

- a. \mathbb{Z}
 - b. \mathbb{R}
 - c. \mathbb{Q}
 - d. \mathbb{I}
 - e. \mathbb{N}
5. Write following expressions as an algebraic expression or equation.
- a. Ten less than three times a number
 - b. Twice the sum of two numbers
 - c. The quotient of the sum of two numbers and the product of the same two numbers
 - d. The product of 7 and a number is less than 16
 - e. The sum of four times a number and 6 is not greater than 34.
 - f. Twenty-five less than the square of a number is equal to the sum of 6 times the same number and five.

6. Simplify the following expressions by hand.

a. $\sqrt[3]{27}(-5) - \sqrt{25}(-3)$

b. $2 - (4 - 7) + (8 + 1)^2$

c. $\frac{\frac{1}{5} \cdot 20 - 6}{10 + \frac{1}{4} \cdot 12}$

7. Simplify each expression as much as possible.

a. $(3x + 4) - (6x - 1)$

b. $3(xy - 2) + xy + 15 - x^2$

c. $\frac{1}{6}(24a - 18b) - \frac{1}{7}(7a - 21b - 2) - \frac{1}{5}$