

MCF3M

Unit 1, Lesson 1

Review of some Basic Algebra

Expand and simplify each of the following:

$$\begin{aligned} \text{a) } & 2(3x-1) - 2x(3x+1) \\ & = 6x - 2 - 6x^2 - 2x \\ & = -6x^2 + 4x - 2 \end{aligned}$$

$$\begin{aligned} \text{b) } & (x+2)(2x+1) \\ & = 2x^2 + x + 4x + 2 \\ & = 2x^2 + 5x + 2 \end{aligned}$$

$$\begin{aligned} \text{c) } & 3(x-2)(x+5) \\ & = (3x-6)(x+5) \\ & = 3x^2 + 15x - 6x - 30 \\ & = 3x^2 + 9x - 30 \end{aligned}$$

$$\begin{aligned} \text{d) } & (x^2 - 3x + 4) - (5x^2 - x + 2) \\ & = x^2 - 3x + 4 - 5x^2 + x - 2 \\ & = -4x^2 - 2x + 2 \end{aligned}$$

$$\begin{aligned} \text{e) } & (x+3)^2 \\ & = (x+3)(x+3) \\ & = x^2 + 3x + 3x + 9 \\ & = x^2 + 6x + 9 \end{aligned}$$

$$\begin{aligned} \text{f) } & (x+1)(2x-1) - (4x-1)(x+3) \\ & = 2x^2 - x + 2x - 1 - (4x^2 + 12x - x - 3) \\ & = 2x^2 + x - 1 - 4x^2 - 11x + 3 \\ & = -2x^2 - 10x + 2 \end{aligned}$$

Suppose that $x = -1$, $y = 2$ and $z = -3$. Then **evaluate** each of the following:

$$\begin{aligned} \text{a) } & x^2 - 2y + z \\ & = (-1)^2 - 2(2) - 3 \\ & = 1 - 4 - 3 \\ & = -3 - 3 \\ & = -6 \end{aligned}$$

$$\begin{aligned} \text{b) } & 3z^2 + x^2 \\ & = 3(-3)^2 + (-1)^2 \\ & = 3(9) + 1 \\ & = 28 \end{aligned}$$

For all of the above questions, you are working with expressions.

no = sign

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Solve each of the following.

a) $2x - 5 = 13$

$$2x - 5 + 5 = 13 + 5$$

$$\frac{2x}{2} = \frac{18}{2}$$

$$x = 9$$

b) $3n - 4 = 6n + 20$

$$3n - 6n = 20 + 4$$

$$\frac{-3n}{-3} = \frac{24}{-3}$$

$$n = -8$$

c) $2(3r - 4) = 3 - 2(r + 6)$

$$6r - 8 = 3 - 2r - 12$$

$$6r + 2r = 8 + 3 - 12$$

$$\frac{8r}{8} = \frac{-1}{8}$$

$$r = -\frac{1}{8}$$

d) $x^2 - 9 = 0$

$$x^2 = 9$$

$$x = \pm\sqrt{9}$$

$$x = 3 \text{ or } x = -3$$

The above questions all deal with equations.**Algebra Review Exercises**

1. Solve each of the following. (we will take these up in class tomorrow)

a) $2n + 18 = 4n - 30$

b) $3(2x - 4) - 3(x + 2) = 5x$

c) $4(z - 3) = 2(z + 1) - 5z$

d) $2s^2 - 72 = 0$

2. Text page 62 #6acdef, 8 (check answers in back of text)

3. Page 122 #3abeef, 4 (check answers in back of text)

ANSWERS to #1: a) $n=24$ b) $x=9/4$ c) $z=2$ d) $s = 6$ or -6