

11 Mathematics B

Introductory assignment – Algebra Review

The purpose of this assignment is for you to revise the algebra you learned last year.

During class today, you should work in a group to answer the first four questions, and hand in one set of answers representing the consensus of your group, with everyone's name on that one page.

At home tonight, answer the remaining four questions.

Directions

In each problem, **compare** the two mathematical expressions. Are they the same? If they are the same, why are they the same? If they are different, when are they different? Can you justify your answer algebraically? Can you explain it in a paragraph? Would a diagram or a graph help?

Example

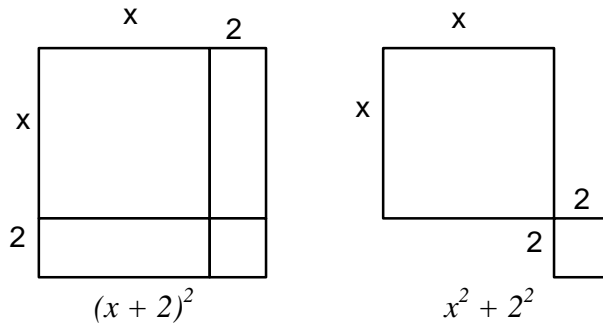
$$x^2 + 2^2 \qquad (x + 2)^2$$

Exemplary Answer

They are different because in one case you're squaring and then summing, and in the other summing and then squaring. The order in which those operations are done is usually important.

Now by expanding, $(x + 2)^2$ is equal to $x^2 + 2(2x) + 2^2$. This is the same as $x^2 + 2^2$ when, and only when, x is 0. The expression $(x + 2)^2$ is bigger if x is positive and smaller if x is negative.

This can be shown with a diagram, showing the missing $2(2x)$:



- | | | | | | |
|----|------------------------|-----------------------|----|---------------|--------------------|
| 1. | $3(x - 2)$ | $3x - 2$ | 2. | -2^2 | $(-2)^2$ |
| 3. | $y = \frac{x(x+1)}{x}$ | $y = x+1$ | 4. | \sqrt{xy} | $\sqrt{x}\sqrt{y}$ |
| 5. | $a^2 - b^2$ | $(a - b)^2$ | 6. | $x^2 - 1 = 0$ | $x - 1 = 0$ |
| 7. | $\sqrt{x+y}$ | $\sqrt{x} + \sqrt{y}$ | 8. | $\sqrt{a^2}$ | a |