Unit 2 Lesson 23: Polynomial Identities (Part 1)

1 Let's Find Some Differences (Warm up)

Student Task Statement

1. Calculate the following differences:

    a. $30^2 - 29^2$

    b. $41^2 - 40^2$

    c. $18^2 - 17^2$

2. What do you notice about these calculations?

2 A Closer Look at Differences

Student Task Statement

1. Clare thinks the difference between the squares of two consecutive integers will always be the sum of the two integers. Is she right? Explain or show your reasoning.

   Pause here for a class discussion.

2. Andre thinks the difference between the squares of two consecutive even integers will always be 4 times the sum of the two integers. Is he right? Explain or show your reasoning.

3 That Expression is How Big?

Student Task Statement

Apply the distributive property to rewrite the following expressions without parentheses, combining like terms where possible. What do you notice?

1. $(x - 1)(x + 1)$

2. $(x - 1)(x^2 + x + 1)$

3. $(x - 1)(x^3 + x^2 + x + 1)$

4. $(x - 1)(x^4 + x^3 + x^2 + x + 1)$

5. $(x - 1)(x^{20} + x^{19} + \ldots + x + 1)$