Algebra 2 6.4 Proving Identities

Name_____ hr__

1. $(a - b)^2 = a^2 - 2ab + b^2$

a) Working left side:

$(a-b)^2$

$(a-b)(a-b)$

$a^2-ab-ab+b^2$

$a^2-2ab+b^2 = a^2-2ab+b^2$

right side

Working right side:

$a^2-2ab+b^2$

$a^2-ab-ab+b^2$

$a(a-b)-b(a-b)$

$(a-b)(a-b)$

$(a-b)^2 = (a-b)^2$

left side

2. $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$

a) Working right side:

$(a+b)(a^2-ab+b^2)$

$a^3-a^2b+ab^2+a^2b-ab^2+b^3$

$a^3+b^3 = a^3+b^3$

left side

3. $(ax + b)(x + a) = ax^2 + a^2x + bx + ab$

a) working left side:

$(ax+b)(x+a)$

$ax^2+a^2x+bx+ab = ax^2+a^2x+bx+ab$

side

working right side

$ax^2+a^2x+bx+ab$

$ax(x+a)+b(x+a)$

$(x+a)(ax+b)$

$(ax+b)(x+a) = (ax+b)(x+a)$

left side

4. $(a + b)^3 = a^3 + b^3 + 3a^2b + 3ab^2$

a) working left side

$(a+b)^3$

$(a+b)(a+b)(a+b)$

$(a^2+ab+ab+b^2)(a+b)$

$(a^2+2ab+b^2)(a+b)$

$a^3+2a^2b+ab^2+a^2b+2ab^2+b^3$

$a^3+b^3+3a^2b+3ab^2 = a^3+b^3+3a^2b+3ab^2$

right side

working right side:

$a^3+b^3+3a^2b+3ab^2$

$(a+b)(a^2-ab+b^2)+3ab(a+b)$

$(a+b)(a^2-ab+b^2+3ab)$

$(a+b)(a^2+2ab+b^2)$ ← PST

$(a+b)(a+b)(a+b)$

$(a+b)^3 = (a+b)^3$

left side