Put both sides into standard form using operations with Polynomials!

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Algebra II

Proving Expressions are Equal

Prove the following expressions are equal

1. $4k^2 - 49 = (2k + 7)(2k - 7)$

	2k	+7
2k	$4k^2$	+14k
-7	-14k	-49

$4k^2-49 = 4k^2-49$

2. $2x^2 + 7x + 3 = (x + 3)(2x + 1)$

	x	+3
2x	$2x^2$	+6x
+1	+1x	+3

$2x^2+7x+3 = 2x^2+7x+3$

2. $a^3 - 8b^3 = (a - 2b)(a^2 + 2ab + 4b^2)$

	a^2	+2ab	$+4b^2$
a	a^3	$2a^2b$	$4ab^2$
-2b	$-2a^2b$	$-4ab^2$	$-8b^3$

$a^3-8b^3 = a^3-8b^3$

4. $2x^2 + 6x - 36 = 2(x - 3)(x + 6)$

$2x^2+6x-36 = (2x-6)(x+6)$

	2x	-6
x	$2x^2$	-6x
+6	+12x	-36

$2x^2+6x-36 = 2x^2+6x-36$

5. $-4(x^2 + x - 5) = 2x^2 - 2(3x^2 + 2x - 6)$

$-4x^2-4x+20 = 2x^2-6x^2-4x+12$

$-4x^2-4x+20 = -4x^2-4x+20$

$-4(x^2+x-5) = 2x^2-2(3x^2+2x-6)$

$-4x^2-4x+12 = 2x^2-6x^2-4x+12$

$-4x^2-4x+12 = -4x^2-4x+12$

6. $3(x - 6)^2 - 1 = 3x^2 - 36x + 107$

square binomial theorem $(x-6)^2$

$3(x^2-12x+36)-1 = 3x^2-36x+107$ $x^2-12x+36$

$3x^2-36x+108-1 = 3x^2-36x+107$

$3x^2-36x+107 = 3x^2-36x+107$

square binomial theorem

7. $(x+2)^2 + 2(x+2) - 8 = (x+6)x$

$x^2+4(x+4+2x+4-8 = x^2+6x$

$x^2+6x = x^2+6x$

8. $m^5 + m^3 - 6m = m(m^2+3)(m^2-2)$

$m^5+m^3-6m = (m^3+3m)(m^2-2)$

	m^3	$+3m$
m^2	m^5	$+3m^3$
-2	$-2m^3$	$-6m$

$m^5+m^3-6m = m^5+m^3-6m$

9. $t^3 + 5t^2 + 6t + t^2 + 5t + 6 = (t+1)(t+2)(t+3)$

$t^3+6t^2+11t+6$

	t	$+1$
t	t^2	$+t$
$+2$	$+2t$	$+2$

$(t^2+3t+2)(t+3)$

	t^2	$+3t$	$+2$
t	t^3	$+3t^2$	$+2t$
$+3$	$+3t^2$	$+9t$	$+6$

$t^3+6t^2+11t+6 = t^3+6t^2+11t+6$

square binomial theorem

10. $2d(d+3)^2(d-3) = 2d^4 + 6d^3 - 18d^2 - 54d$

$2d(d^2+6d+9)(d-3) = 2d^4+6d^3-18d^2-54d$

$(2d^3+12d^2+18d)(d-3) = 2d^4+6d^3-18d^2-54d$

	$2d^3$	$+12d^2$	$+18d$
d	$2d^4$	$+12d^3$	$+18d^2$
-3	$-6d^3$	$-36d^2$	$-54d$

$2d^4+6d^3-18d^2-54d = 2d^4+6d^3-18d^2-54d$