

Intermediate Algebra
Skill-BUILDER # AE - 8
Multiplying “Long” Polynomials Using Special Products for Binomials

Examples Multiply using special products for binomials.

1. $[(x+1)-y][(x+1)+y]$

Solution:

Letting $a = x+1$ the problem reduces to

$$(a-y)(a+y)$$

which gives the difference of squares

$$a^2 - y^2$$

and replacing a by $x+1$ we get

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

Expanding $(x+1)^2$ we get the final answer

$$x^2 + 2x + 1 - y^2.$$

2. $[(a+3)+b][c+(d-1)]$

Solution:

Letting $x = a+3$ and $y = d-1$ the problem reduces to

$$(x+b)(c+y)$$

which gives (using FOIL)

$$xc + xy + bc + by$$

and replacing back x and y by $a+3$ and $d-1$, respectively, we get

$$(a+3)c + (a+3)(d-1) + bc + b(d-1).$$

Carrying out the multiplication

$$ac + 3c + ad - a + 3d - 3 + bc + bd - b.$$

Intermediate Algebra**Skill-Builder # AE - 8****Multiplying “Long” Polynomials Using Special Products for Binomials**

Multiply using special products for binomials.

1. $[a - (b + 2)]^2$

2. $[(x + y) + 4n][(x + y) - 4n]$

3. $[(n - 1) + 2m][(n + 1) - 3m]$

4. $[(b - 2) - (a - c)]^2$

5. $[x + (2y - 1)][(x + 1) - 5y]$

6. $[(p + q) - (r + s)][(p + q) + (r + s)]$

7. $[4y + (x - 1)]^2$

8. $[(2a - b) - (3c + 4d)]^2$

Intermediate Algebra
Skill-Builder # AE - 8
Multiplying “Long” Polynomials Using Special Products for Binomials

Answers

1. $a^2 - 2ab - 4a + b^2 + 4b + 4$

2. $x^2 + 2xy + y^2 - 16n^2$

3. $n^2 - 1 - mn + 5m - 6m^2$

4. $b^2 - 4b + 4 - 2ba + 2bc + 4a - 4c + a^2 - 2ac + c^2$

5. $x^2 - 3xy + 7y - 1 - 10y^2$

6. $p^2 + 2pq + q^2 - r^2 - 2rs - s^2$

7. $16y^2 + 4yx^2 - 8xy + 4y + x^2 - 2x + 1$

8. $4a^2 - 4ab + b^2 - 12ac - 16ad + 6bc + 8bd + 9c^2 + 24cd + 16d^2$

Prepared by: Dr. Teresa V. Sutcliffe, Fall 2009