# 4.6 Mulitplying & Factoring Difference of Squares

## A. Multiplying Two Binomials (DoS)

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

$= x^2 - 9$

| | $x$ | $3$ |
|---|---|---|
| $x$ | $x^2$ | $3x$ |
| $-3$ | $-3x$ | $-9$ |

2. $(x+5)(x-5)$

Look for patterns!!!

SKIP

3. $(x-9)(x+9)$

SKIP

Look for patterns!!!

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

$= 4x^2 - 1$

| | $2x$ | $1$ |
|---|---|---|
| $2x$ | $4x^2$ | $2x$ |
| $-1$ | $-2x$ | $-1$ |

5. $(3x-5)(3x+5)$

$= 9x^2 - 25$

| | $3x$ | $-5$ |
|---|---|---|
| $3x$ | $9x^2$ | $-15x$ |
| $5$ | $15x$ | $-25$ |

6. $(3x-2)(3x+2)$

SKIP

7. $(2x+5y)(2x-5y)$

SKIP

8. $(5x-4y)(5x+4y)$

SKIP

Look for patterns!!!

9. $(2x^2-3y^4)(2x^2+3y^4)$

$= 4x^4 - 9y^8$

| | $2x^2$ | $-3y^4$ |
|---|---|---|
| $2x^2$ | $4x^4$ | $-6x^2y^4$ |
| $3y^4$ | $6x^2y^4$ | $-9y^8$ |

10. $(x^2-3y)(x^2+3y)$

$= x^4 - 9y^2$

| | |
|---|---|
| | |

## B. Factoring a Difference of Squares

**two perfect square numbers with a difference between them**

1. $x^2 - 9$

$=(x+3)(x-3)$

| | $x$ | $3$ |
|---|---|---|
| $x$ | $x^2$ | $3x$ |
| $-3$ | $-3x$ | $-9$ |

M $-9$
A $0$
N $3, -3$

2. $9x^2 - 16$

$(3x)^2 \quad (4)^2$

$=(3x+4)(3x-4)$

Look for patterns!!!

3. $25x^2 - 81$

$(5x)^2 - (9)^2$

$=(5x-9)(5x+9)$

Look for patterns!!!

4. $9x^2 - 1$

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

$=(3x-1)(3x+1)$

5. $4x^2 - 25$

SKIP

6. $4x^2 - 81y^2$

$=(2x+9y)(2x-9y)$

7. $49x^2y^2 - 100z^2$

$=(7xy+10z)(7xy-10z)$

Look for patterns!!!

8. $36x^4 - 121y^2z^2$

$=(6x^2+11yz)(6x^2-11yz)$

Remember to always look for a GCF!

$$18x^2 - 50$$
$$= 2(9x^2 - 25)$$
$$= 2(3x - 5)(3x + 5)$$