Proving Polynomial Identities

*A **Polynomial** is an algebraic expression containing variables and constants. It contains multiple terms.*

Examples

$3z^2-4z+6$ $6x-2$ $8y^3-5y^2+5x+6$

Proving Identity $(a+b)^2 = a^2+2ab+b^2$

EXAMPLES

FIND THE SQUARE: $(6X+5Y)^2$

SUPPOSE: A=6X AND B=5Y

NOW, USING $(A+B)^2 = A^2+2AB+B^2$

SO, $(6X+5Y)^2 = (6X)^2+2(6X)(5Y)+(5Y)^2$

$= (6^2.X^2)+60XY+(5^2.Y^2)$ USING $(AB)^2 = A^2.B^2$

$= 36X^2+60XY+25Y^2$

Proving Identity $(a-b)^2 = a^2-2ab+b^2$

EXAMPLES

FIND THE SQUARE: $(\frac{x}{3} - \frac{y}{4})^2$

SUPPOSE: $A=\frac{x}{3}$ AND $B=\frac{y}{3}$

NOW, USING $(A-B)^2 = A^2-2AB+B^2$

SO, $(\frac{x}{3} - \frac{y}{4})^2 = (\frac{x}{3})^2-2(\frac{x}{3})(\frac{y}{4})+(\frac{y}{4})^2$

$= (\frac{x^2}{3^2})- \frac{2}{12}.X.Y+(\frac{y^2}{4^2})$ USING $(AB)^2 = A^2.B^2$

$= \frac{x^2}{9} - \frac{xy}{6} + \frac{y^2}{16}$

Meets: Common Core Standard High School – HSA-APR.C.4