


Unit 2: Quadratics

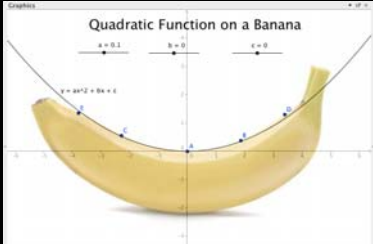



2.0 Factoring Review

The main skill you must have in order to be successful in Quadratics is factoring. Let's review the four methods to factor.

binomial 2 terms	trinomial 3 terms	4 terms	any # of terms
<p>Difference of Squares</p> <p>eg.) <math>x^2 - 64</math></p> <p><math>= (x+8)(x-8)</math></p>	<p>Decomposition</p> <p>2 m: 2 1 2 A: 3 3</p> <p>eg.) <math>x^2 + 3x + 2</math></p> <p><math>x^2 + \frac{1x}{x} + \frac{2x}{x} + \frac{2}{2}</math></p> <p><math>x(x+1) + 2(x+1)</math></p> <p><span style="border: 1px solid black; padding: 2px;"><math>(x+1)(x+2)</math></span></p>	<p>Grouping</p> <p>eg.)</p>	<p>Greatest Common Factor</p> <p>eg.) <math>\frac{2x^3 + 4x^2 + 8x}{2x \quad 2x \quad 2x}</math></p> <p><math>2x(x^2 + 2x + 4)</math></p>

\*check 1st\*





Greatest Common Factor

Ex. 1)  $\frac{15w^4}{5w^2} + \frac{5w^2}{5} - \frac{25w^3}{5w^2}$

$= 5w^2(3w^2 + 1 - 5w)$

2)  $\frac{18x^4}{6x^2} + \frac{24x^2}{6x^2} - \frac{54x^3}{6x^2}$

$= 6x^2(3x^2 + 4 - 9x)$

\*\*Note: Factoring out a GCF is ALWAYS the first thing you check for.\*\*



Difference of Squares

Ex. 1)  $\sqrt{4x^2 - 9}$

$$= \boxed{(2x - 3)(2x + 3)}$$

2)  $\frac{16x^4}{16} - \frac{64y^2}{16}$

$$= 16(x^4 - 4y^2)$$

$$= \boxed{16(x^2 - 2y)(x^2 + 2y)}$$

3)  $\frac{xw^2y^2}{x} - \frac{x^3z^2}{x}$

$$= x(w^2y^2 - x^2z^2)$$

$$= \boxed{x(wy + xz)(wy - xz)}$$



Decomposition/Grouping

Ex. 1)  $x^2 + 8x + 15$

3  $\begin{matrix} 15 \\ \diamond \\ 8 \end{matrix}$  5

$$= x^2 + 3x + 5x + 15$$

$$= \underline{x(x+3)} + \underline{5(x+3)}$$

$$= \boxed{(x+3)(x+5)}$$

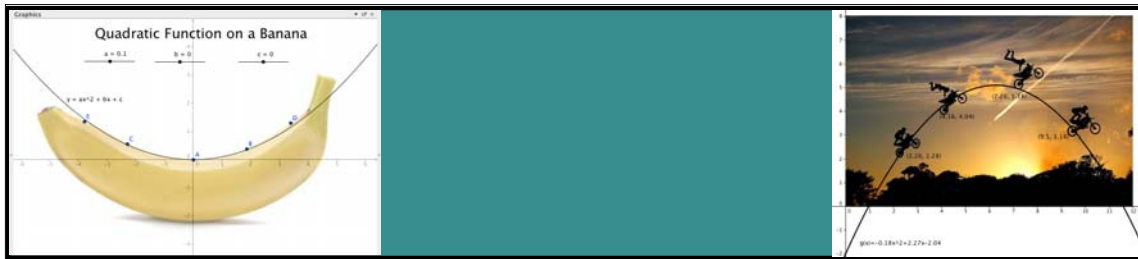
2)  $x^2 - x - 12$

3  $\begin{matrix} -12 \\ \diamond \\ -4 \end{matrix}$  -1

$$= x^2 + 3x - 4x - 12$$

$$= \underline{x(x+3)} - \underline{4(x+3)}$$

$$= \boxed{(x+3)(x-4)}$$



Ex. 3)  $2x^2 - 7x + 3$

$\begin{matrix} & 6 & \\ -1 & \diamond & -6 \\ & -7 & \end{matrix}$

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

$\underline{(2x-1)} \quad \underline{-3(2x-1)}$

$\boxed{(2x-1)(x-3)}$

4)  $15x^2 - 17x - 4$

$\begin{matrix} & -60 & \\ -20 & \diamond & 3 \end{matrix}$

$= 15x^2 - 20x + 3x - 4$

$5x(3x-4) + 1(3x-4)$

$\boxed{(3x-4)(5x+1)}$



5)  $x^2 + 7x + 10$

$\begin{matrix} & 10 & \\ 2 & \diamond & 5 \\ & 7 & \end{matrix}$

$= \boxed{(x+2)(x+5)}$

6)  $x^2 - 3x - 10$

$\begin{matrix} & -10 & \\ -5 & \diamond & 2 \\ & -3 & \end{matrix}$

$= \boxed{(x-5)(x+2)}$

7)  $4x^4 - 5x^2 - 6$

$\begin{matrix} & -24 & \\ -8 & \diamond & 3 \\ & -5 & \end{matrix}$

$= 4x^4 - 8x^2 + 3x^2 - 6$

$4x^2(x^2-2) + 3(x^2-2)$

$= \boxed{(x^2-2)(4x^2+3)}$

8)  $2a^2b^2 - 31ab + 99$

$\begin{matrix} & 198 & \\ -9 & \diamond & -22 \end{matrix}$

$= 2a^2b^2 - 9ab - 22ab + 99$

$ab(2ab-9) - 11(2ab-9)$

$= \boxed{(2ab-9)(ab-11)}$

Practice Factoring Worksheet