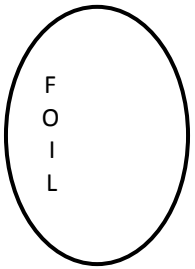
MBF 3C1 Name: _____

UNIT 2 SURVIVAL GUIDE: Quadratic Relations in Factored Form

MULTIPLYING BINOMIALS

- every term in the first bracket must be _____ by each term in the second bracket

eg. $(2x+1)(3x-4)$



COMMON FACTORING

1. find the _____ (the term that divides into each term in the polynomial evenly)
   Choose the greatest number and the most variables that will divide evenly into each term
2. divide the common factor into each _____ in the polynomial
3. write the answer in proper form: _____

eg. $12x^3 - 4x^2 + 10x$

FACTORING BY SUM & PRODUCT

- use this method when given a polynomial in the form _____
- look for 2 factors of ___ which also add to ___

1. set up two brackets
2. put the square root of the _____ into each of the brackets
3. put one factor of _____ in the first bracket and the second in the other bracket

eg. $x^2 + 7x + 6$

CONVERTING VERTEX TO STANDARD FORM

- expand using the distributive property
  (make sure to write equation out in _____)

eg. $y = 3(x+2)^2 - 8$

- when an equation is in standard form, the _____ can be located; it is the value of __

FACTORING BY DIFFERENCE OF SQUARES

- make sure the binomial has
  2 _____terms
  terms being _____
  even powers only

1. set up two brackets
2. put the square root of each term into each of the brackets
3. in one bracket separate the terms with a _____ and in the other with a _____

eg. $49x^2 - 64$

MIXED FACTORING

- always check for _____first
- factor using the most appropriate method:
  _____ (for binomials) or _____ (for trinomials)
- check the _____in the answer to see if they can be factored further

eg. $2x^4 - 2$

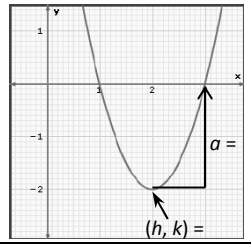
FACTORED FORM

- _____
- *r* and *t* represent the _____ and must be removed from the bracket: $x - r = 0$ and $x - t = 0$
  $x = r$ $x = t$
- to find zeros from an equation:
  1. factor if necessary
  2. remove the zeros (*r* and *t*) from the brackets

  eg. $x^2 - 5x + 6$

- using a graph to create an equation in factored form:
  1. locate _____ (*r* and *t*)
  2. use the _____ to find *a*
     OR _____
  3. sub *a*, *r* and *t* into _____

  eg.



$y = a(x - r)(x - t)$

SUMMARY

- standard form: _____
  - ➡ *a* = reflection (max/min) and stretch/compression
  - ➡ *c* = *y*-intercept
- vertex form: _____
  - ➡ *a* = reflection (max/min) and stretch/compression
  - ➡ *h* = horizontal translation and axis of symmetry ($x = h$)
    ** remove from bracket*
  - ➡ *k* = vertical translation and optimal value
  - ➡ (*h*, *k*) = vertex
- factored form: _____
  - ➡ *a* = reflection (max/min) and stretch/compression
  - ➡ *r* and *t* = zeros
    ** remove from bracket*
  - ➡ TO FIND VERTEX:
  - ➡ *h* = _____ = a. of s.
  - ➡ *k* = _____ = opt. val.
  - ➡ (*h*, *k*) = vertex

UNDERSTANDING PROBLEMS RELATED TO FACTORED FORM

- draw sketches to help visualize the situation
- consider how key features relate to the context of the problem:
  - initial point = _____
  - break-even points/distance/time/etc. = _____
  - max/min profit/distance/height/etc. = _____
    _____
  - point at which max/min occurs =
    _____