

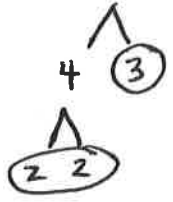
# EOC Review #3

## radical & complex #'s / quadratics

simplifying radicals

•  $\sqrt{-56}$

•  $\sqrt{12} = 2\sqrt{3}$



the pairs go outside & singles stay in

\* remember that  $i = \sqrt{-1}$   
so  $i^2 = -1$

\* you can only add like radicals \*

•  $\sqrt{3} + 2\sqrt{3} = 3\sqrt{3}$

\* you can multiply any radicals \*

•  $\sqrt{7} \cdot \sqrt{3} = \sqrt{21}$

- dividing radicals & complex #'s [multiply by the conjugate of the denominator]

•  $\frac{2}{1+\sqrt{3}} \cdot \frac{1-\sqrt{3}}{1-\sqrt{3}} = \frac{2-2\sqrt{3}}{1-3}$   
↑ ↑  
conjugates  
 $= \frac{2-2\sqrt{3}}{-2}$   
 $= -1 + \sqrt{3}$

•  $\frac{8+i}{2-i}$

# quadratics

\* transformations → how the parabola moves on the coordinate plane

↳ put the quadratics in your calculator & look at the shifts

$$y = x^2 \rightarrow y = x^2 + 6x + 5$$

\* solving quadratics / finding zeros, roots, x-intercepts

- quadratic formula  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

[ $b^2 - 4ac$  is called the discriminant]

- put equation in calculator

↳ graph

- 2<sup>nd</sup> TRACE

2: zero

left bound: ENTER

right bound: ENTER

guess: ENTER

→ either scroll left of zero or type #

→ either scroll right of zero or type #

\* use the graphing calculator to your advantage

# EOC Review #4

## Polynomials

\* zeros & factors are opposites!

factor:  $(x+4)$

zero:  $x = -4$

factors:  $(x-2)(x+3)$

zeros:

\* degree of polynomial = total # of zeros  
(real zeros + complex zeros)

$$y = x^4 - 3x^3 + 2x - 9$$

↑  
where the function crosses the x-axis

# of real zeros:

# of complex zeros:

[complex zeros come in pairs!  $\frac{2+i}{2-i}$  or  $\frac{i}{-i}$  or  $\frac{7-i}{7+i}$  or  $\frac{1+2i}{1-2i}$ ]

\* you can find zeros by graphing OR synthetic division

$$y = x^3 + 2x^2 + x + 2 = (x+2)(x^2 + 1)$$

$$\begin{array}{r|rrrr} -2 & 1 & 2 & 1 & 2 \\ & \downarrow & -2 & 0 & -2 \\ \hline & 1 & 0 & 1 & 0 \end{array}$$

$\uparrow$   
 $x=2$

$x^2+1=0$   
 $x^2=-1$   
 $x=\pm i$

$\underbrace{1 \ 0 \ 1 \ 0}$  ← remainder  
coefficients of other factor  
(start one less degree)

zeros are  $x=2, i, -i$

