

Radicals

- Laws
- Simplifying/Expanding
- Adding Subtracting Coefficients
- Multiplying Dividing
- Rationalizing/Conjugates
- Solve/Isolate a root
- Square Both Sides/Again

$$\frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{1}{\sqrt{2}}$$

Restrictions: Set underneath root ≥ 0 and solve

Inequalities

- One Variable - Number Line
- Sign Analysis $+ve: > 0, -ve: < 0$
- Two Variables Shading
- Test Point(s) $\geq, \leq \bullet$ _____
- Linear $<, > \circ$ -----
- Quadratic $<, > \circ$ -----
- Systems
- Multiply/Divide (-ve) Change Sign Direction!

Quadratics

- Graphing TOV
- Transformations
- Complete the Square
- Vertex Form \rightarrow
- Calculator 2nd Calc

Standard Form
 $y = ax^2 + bx + c$
 $V: (-\frac{b}{2a}, y)$
 Vertex Form \rightarrow
 $y = a(x - p)^2 + q$
 $V: (p, q)$

Solving x - intercepts $y = 0$ $(x, 0)$
 Get = 0. Factor $(+x^2, x, \# = 0)$
 $0 = (x + 2)(2x + 3)$
 Set brackets* = 0 separately and solve

$x + 2 = 0$ $2x + 3 = 0$
 $x = -2$ $x = -\frac{3}{2}$ $(a)(b) = 0$
 $(a) = 0$ $(b) = 0$

Factored Form $y = a(x - \#)(x - \#)$

Square Root Method

Isolate Squared Term $\sqrt{(x + 2)^2} = \pm\sqrt{5}$
 Square Root Both Sides

Quadratic Formula

$x_{int} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ \leftarrow **Discriminant**

- Case 1:** $b^2 - 4ac > 0$ Two x - ints
- Case 2:** $b^2 - 4ac < 0$ No x - int
- Case 3:** $b^2 - 4ac = 0$ One x - int

Absolute Value

Isolate Absolute Value
 "+" case: distribute a + into absolute value
 "-" case: distribute a - into absolute value
 Make y-values positive
 $|x| = -3$ Impossible, no solution.
 $y_1 = +case$ LHS, $y_2 = -case$ LHS, $y_3 = RHS$
 Piecewise function:
 $y = \begin{cases} "+" \text{ case, Domain } & Set \ || \geq 0 \text{ and solve} \\ "-" \text{ case, Domain } & Set \ || < 0 \text{ and solve} \end{cases}$

Reciprocals

Restrictions: Set Denominator $\neq 0$ and solve
 Domain: $x \neq$ Restrictions $\frac{1}{x + 2 \neq 0}$
 VA: $x =$ Restrictions
 Invariant points: set denominator = ± 1 , solve $(x, \pm 1)$ (Or Original) $x + 2 = \pm 1$

Rationals

- Do to Top/Do to Bottom
- Multiply Tops/Bottoms
- Flip and Multiply
- Adding Subtracting LCD
- Solving Multiply LCD
- Do to one/Do to all
- State Restrictions: Above!

Sequences

See Formula Sheet!
 $t_n = t_1 + (n - 1)d$
 _____, _____ ... _____
 t_1 t_2 t_n

Systems $(x, y), (x, y)$

Graphing TOV/Calc Substitution Elimination
 $y_1 = LHS$ **OR** $y_1 = y_2$
 $y_2 = RHS$ $y_1 \pm y_2 = y_3 = 0$
 Find Intersection Find x-ints

LHS : Left Hand Side of Equal Sign $LHS = RHS$
 $LHS - RHS = 0$

Trigonometry

- ASTC/Unit Circle
- Special Triangles
- $\theta_r = \sin^{-1}(+)$
- $\theta_{stp}, \theta_r, \theta_{cot}, \theta_{gen}, \theta_{pri}$
- Sine/Cos Law
- ASS Ambiguous
- Rationalize
- let $m = 2x^*$

M8-10 Methods

- Bedmas/# Forms
- Substitution, let $m = \#$
- Algebra/Fractions
- $y = mx + b$
- Exponents/Geometry
- Factoring/FOIL
- Inequalities