DO NOW

Locate your "golden sheet" on graphing parabolas and look it over.

Page 1

Review 8

1. Solving Quadratic Equations — Find roots
   → Always put in standard form 1st: $ax^2+bx+c=0$
   a. Factor: GCF, LOIF, DIFF
      * If $ab=0$, then $a=0$ or $b=0$
   b. Completing the square $\left(\frac{b}{2}\right)^2$
   c. Graph: x-intercepts
      table → $y=0$
   d. Quadratic formula
      $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$

   * Word problems

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2. Graphing Quadratic Functions
   $y=ax^2+bx+c$
   * Calculator
     ↳ Copy the table of values
   – parabola

Smile	Frown
↑	↓
a is positive	a is negative
minimum	maximum

   – axis of symmetry → $x=\frac{-b}{2a}$
   – vertex or turning point
   * Special case
     Given a specific domain
     * NO arrows
     Ex: $-2\leq x\leq 4$

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3. Nature of Roots
   ↳ ways to determine
   * graph → x-intercepts
   * discriminant → radicand of quadratic formula
     b^2-4ac
   a. 2 real and unequal roots (2 x-intercepts)
      → 2 rational ($b^2-4ac>0$ and perfect square)
      → 2 irrational ($b^2-4ac>0$, but not perfect square)
   b. real and equal (1 x-intercept)
      → double root ($b^2-4ac=0$)
   c. no real roots (no x-intercepts)
      → imaginary roots ($b^2-4ac<0$)

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4. Vertex Form $f(x)=a(x-h)^2+k$
   * use completing the square to rewrite from standard form to vertex form.

5. Transformations
   a → negative → reflects in x-axis
   $|a|>1$ → narrower
   $|a|<1$ → wider
   h → horizontal shift
   k → vertical shift

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6. Recognizing Functions
   a. Linear – line
   b. Quadratic → parabola
   c. Cubic function → N
   d. absolute value → V
   e. Square root → $\frac{1}{2}$ sideways parabola
   f. Cubed root → S

7. Write the Equation Given a Graph (Quadratic & cubic)
   – Start with roots in "x=" form
   – set = 0
   – multiply together = 0
   * check if + or –
   – clean up
   – replace "=0" with "y="

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8. Quadratic - Linear Systems

Graphically
→ graph parabola (table)
→ graph line (y=mx+b)
★ Identify intersections

Algebrically
↳ use substitution method

HOMEWORK

Worksheet - HW Review 8.11