Mathematics Class Slides

Bronx Early College Academy

Chris Huson

17 October - 1 November 2018

3.1 Drui: Quadratic equations, Wednesday Oct 17

3.2 Drui: Completing the square, Thursday Oct 18

3.3 Drui: The quadratic formula, Monday Oct 22

3.4 Drui: Laptop, Deltamath, Desmos /Word. Tuesday Oct 23

3.5 Drui: The quadratic formula, Wednesday Oct 24

3.6 Drui: Equations from graphs, Thursday Oct 25

3.7 Drui: Applications of quadratics, Monday Oct 29

3.8 Drui: Laptop, Deltamath, Desmos /Word. Tuesday Oct 30

3.9 Drui: Applications of quadratics, Wednesday Oct 31

3.10 Drui: Applications of quadratics, Monday Nov 5

GQ: How do we solve quadratic equations?

CCSS: HSF.IF.C.7 Analyze functions 3.1

Do Now: Skills check #1, 2a-c, p. 32

Lesson: Quadratics review p 33-35, Exercises 2A, p. 35
Homework: Exercises 2B, p. 35

GQ: How do we solve quadratic equations?

CCSS: HSF.IF.C.7 Analyze functions 3.2

Do Now: Investigation #1, 3, 5 p. 36

Lesson: Completing the square p 36-40, Exercises 2C p. 37
Homework: Exercises 2D (all) p. 38, 2E (odds) p. 40, 2F pick two.

GQ: How do we solve quadratic equations?

CCSS: HSF.IF.C.7 Analyze functions 3.3

Do Now:

1. Factor the expression $x^2 - 25$
2. Write down the domain and range of $y = (x-3)^2 - 4$.
3. Find the asymptotes of $f(x) = \dfrac{1}{x^2-4}$.
4. Pick one problem you have not done from 2F pp. 40-1

Lesson: The quadratic formula and the discriminant pp. 38-42
The powers of i, the solution to $x^2 = -1$

Homework: Exercises 2E (evens?) p. 40, 2G (a and c) p. 42-3

How do we communicate mathematical results?

CCSS: MP.4 Model with mathematics 3.4

Technical skills needed to communicate mathematics

1. Word processing: Microsoft Word and equation editor
2. Computer calculators: Desmos; domain restriction, labeling
3. Cloud storage: Dropbox
4. Technical writing standards: MLA format (Purdue OWL)
5. Writing style: declarative
6. Assessment criteria: IB exploration criterion *B: Mathematics Presentation*

Lesson: Shared folder structure, graph copy/paste, MLA template

Homework: Deltamath followup. Open textbook online

GQ: How do we solve quadratic equations?

CCSS: HSF.IF.C.7 Analyze functions 3.5

Do Now: Simplifying radicals

1. Write down a list of the first eight powers of i.
2. Factor 18 as a perfect square times 2
3. Simplify $\sqrt{-18}$ by separating it into three components: an integer, an irrational root, and i
4. Simplify $\sqrt{-20}$, $\sqrt{-12}$, $\sqrt{-50}$

Lesson: Using the discriminant pp. 38-42
Features of parabolas pp. 43-46

Homework: Exercises 2G (b and d) p. 42-3, 2H p. 46.

GQ: How do we derive a quadratic's equation from a graph?

CCSS: HSF.IF.C.7 Analyze functions 3.6

Do Now: Given the equation $f(x) = x^2 - 6x + 5$

1. Write the function in factored form.
2. Complete the square and write the function in vertex form.
3. Sketch the function, marking the intercepts, vertex, and axis of symmetry (labeled as an equation).
4. Use a graphing calculator to check your sketch.

Lesson: Parabola features, deriving a function's equation pp. 49-52 Examples 14, 15, & 16

Homework: Exercises 2I (a and c) p. 48, 2J p. 52

GQ: How do we solve problems with quadratic equations?

CCSS: HSF.IF.C.7 Analyze functions 3.7

Do Now: Quadratic function practice

1. Write the function $f(x) = x^2 - 10x - 24$ in factored form.
2. Complete the square and write the function $g(x) = x^2 - 10x + 24$ in vertex form.
3. The function $h(x)$ has x-intercepts of 1 and 5, and a y-intercept of 10. Express $h(x)$ in standard form.

Lesson: Solving problems involving quadratics pp. 53-4
Examples 17, 18

Homework: Exercises 2K #1-4 p. 55

How do we communicate mathematical results?

CCSS: MP.4 Model with mathematics 3.8

Technical skills needed to communicate mathematics

1. Word processing: Microsoft Word and equation editor
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4. Technical writing standards: MLA format (Purdue OWL)
5. Writing style: declarative
6. Assessment criteria: IB exploration criterion *B: Mathematics Presentation*

Lesson: Deltamath individualized instruction on quadratics

Homework: Deltamath followup, 10pm deadline. Open textbook online

GQ: How do we solve problems with quadratic equations?

CCSS: HSF.IF.C.7 Analyze functions 3.9

Do Now: Function operations and inverses, review

1. Given $f(x) = 2x - 1$ and $g(x) = x^2 + 1$. Find $f + g$, $f \circ g$, and $(g \circ f)(-1)$.
2. Graph the function $h = \{(-1, 0), (1, 2), (3, 1), (4, 5)\}$ and its inverse h^{-1}.
3. Find the inverse of the function $h(x) = 5x + 2$.

Lesson: Solving problems involving quadratics pp. 53-4
Problem #4 p. 55

Homework: Exercises 2K #5-10 p. 55-56 (Deltamath)

GQ: How do we solve problems with quadratic equations?

CCSS: HSF.IF.C.7 Analyze functions 3.10

Do Now: Graphing practice, handout

Review homework: Solving problems involving quadratics 2K
#1-10 p. 55-56
IB Exam problems, handout

Homework: Complete handout problems