Mathematics Class Slides

Bronx Early College Academy

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24 September - 5 October 2018

2.1 Drui: Composite functions

2.2 Drui: Laptop work with Desmos and Word. Tuesday Sept 25

2.3 Drui: Inverse functions, Wednesday Sept 26

2.4 Drui: Inverse functions, Thursday Sept 27

2.5 Drui: Transformations, Monday Oct 1

2.6 Drui: Laptop work with Desmos and Word. Tuesday Oct 2

2.7 Drui: Review, Wednesday Oct 3

2.8 Drui: Test, Thursday Oct 4

2.9 Drui: Laptop, Deltamath, Desmos /Word. Tuesday Oct 9

2.10 Drui: Asymptotes review, Wednesday Oct 10

2.11 Drui: Transformations, Thursday Oct 11

2.12 Drui: Function operations review, Monday Oct 15

2.13 Drui: Laptop, Deltamath, Desmos /Word. Tuesday Oct 16

GQ: How do we combine functions?

CCSS: HSF.IF.C.7 Analyze functions 2.1

Do Now: Textbook exercises 1E # 3-5 pp. 13-14

1. Write practice problems on loose leaf paper
2. In your notebook, write the Guiding Question and the date
3. Take out homework, calculator

Lesson: Function composition, operations p 14-15

Homework: Problem set: Function operations

How do we communicate mathematical results?

CCSS: MP.4 Model with mathematics 2.2

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: Pre-test

GQ: How do we find the inverse of functions?

CCSS: HSF.IF.C.7 Analyze functions 2.3

Do Now: Function composition, operations.

1. Given $f(x) = x - 5$ and $g(x) = x^2$. Find $f + g$, $f \circ g$, and $(g \circ f)(3)$
2. If $r(x) = x - 3$ and $s(x) = x^2$, find $(r \circ s)(x)$ and state its domain and range.

Lesson: Function inverses p 16-19; Exercise 1G p.18-19

Homework: Problem set: Function inverses

GQ: How do we find the inverse of functions algebraically?

CCSS: HSF.IF.C.7 Analyze functions 2.4

Do Now: Function composition, inverses.

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. Sketch $f(x) = e^x$ and its inverse $f^{-1}(x) = \ln x$. (use your calculator table function)

Review formula sheets
Lesson: Function inverses p 19-20; Exercise 1H p.1-8

Homework: Problem set: Function inverses

GQ: How do we transform functions?

CCSS: HSF.IF.C.7 Analyze functions 2.5

Do Now: Function composition, inverses.

1. Given $f(x) = x - 2$ and $g(x) = x^2 - 1$. Find $f \circ g$, and $(g \circ f)(3)$.
2. Find the inverse of the function $h(x) = 5x + 2$.
3. Given a quadratic function with vertex $(3, 2)$ and leading coefficient $a = 1$. Write down the function in vertex form. Factor the function and state the zeros. Show that in standard form the function is $y = x^2 - 6x + 11$.

Review formula sheets

Lesson: Function inverses p 21-24; Exercise 1I p.1-7

Homework: Problem set: Function inverses

How do we communicate mathematical results?

CCSS: MP.4 Model with mathematics 2.6

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: Function transformations practice

GQ: How do we transform functions?

CCSS: HSF.IF.C.7 Analyze functions 2.7

Do Now: Review handout, function composition, inverses.

Scope p.1-29

Example exam problems

Homework: Study for exam

GQ: How do we transform functions?

CCSS: HSF.IF.C.7 Analyze functions 2.8

Exam: function composition, inverses.

Scope p.1-29

Homework: Handout review problems

How do we communicate mathematical results?

CCSS: MP.4 Model with mathematics 2.9

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 transform functions?

CCSS: HSF.IF.C.7 Analyze functions 2.10

Do Now: Asymptotic behavior

1. Write down the equation of a horizonal line through $(3, 2)$
2. Write down the equation of the axis of symmetry of a parabola having the vertex (h, k)
3. Write down the domain and range of the given parabolic function
4. Sketch the function $f(x) = \dfrac{2x - 7}{x + 1}$, including the asymptotes.
5. Explain the algebraic features of f leading to the asymptotes

Lesson: Rational functions and graphical analysis

Homework: Complete exercises 1I (?)

GQ: How do we transform functions?

CCSS: HSF.IF.C.7 Analyze functions 2.11

Do Now: Translation warmup graphing

1. 1.6 Investigation #3 p. 21
2. Spicy: Graph Exercises 1I #1a, 1d on the same axes.
3. Spicy: Answer #2 and 3

Lesson: Function transformations p 21-24; Exercise 1I p.1-7

Homework: Complete review exercises p. 25-28

GQ: How do we transform functions?

CCSS: HSF.IF.C.7 Analyze functions 2.12

Do Now: Exponent review

1. $2^3 \cdot 2^2$
2. $3^6 \div 3^2$
3. $(5^3)^2$
4. $\dfrac{x^2 \cdot x^4}{x^3}$
5. $x^3 \cdot x^2$
6. $(ab)^6 \div a^2 b$
7. $(2m^3)^2$
8. $x^{-\frac{1}{2}}$

Lesson: Function operations review p 25-28

Homework: Complete review exercises p. 25-28

How do we communicate mathematical results?

CCSS: MP.4 Model with mathematics 2.13

Technical skills needed to communicate mathematics

1. Word processing: Microsoft Word and equation editor
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3. Cloud storage: Dropbox
4. Technical writing standards: MLA format (Purdue OWL)
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6. Assessment criteria: IB exploration criterion *B: Mathematics Presentation*

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

Homework: Deltamath followup. Open textbook online