

Mathematics Class Slides

Bronx Early College Academy

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2 March 2020

6.1 Intro to calculus	Wednesday 26 February
6.2 Intro to calculus	Thursday 27 February
6.3 Power rule - Deltamath practice	Friday 28 February
6.4 Review calculator functions	Monday 2 March
6.5 Quiz calculator functions, Deltamath calculus	Tuesday 3 March
6.6 Solve for extrema with derivative	Thursday 5 March
6.7 Solve for extrema with derivative	Friday 6 March
6.8 Solve for extrema with derivative	Monday 9 March
6.9 DN Quiz, Gradescope review	Tuesday 10 March
6.10 Derivatives of exp, trig function	Thursday 12 March
6.11 Derivatives of exp, trig function	Friday 13 March
6.12 Derivatives of exp, trig function	Monday 16 March

GQ: How do we graph tangents to functions?

CCSS: HSF.IF.C.8.A Understanding rate of change

6.1 Wednesday 26 February

Do Now: Linear equation practice

1. Write down the equation of the line through $(2, -3)$ with slope $m = 2$
2. Write down the equation of the line through $(-1, 0)$ perpendicular to the line with slope $m = 2$
3. Sketch the function $f(x) = x^2 + 1$ and $g(x) = -2x$ on the same axes

Lesson: Polynomial function terminology, the power rule

Homework: Deltamath calculus practice

GQ: How do we graph tangents to functions?

CCSS: HSF.IF.C8.A Understanding rate of change

6.2 Thursday 27 February

Do Now: Linear equation practice

1. Write down the equation of the line through $(2, -3)$ with slope $m = 2$
2. Write down the equation of the line through $(-1, 0)$ perpendicular to the line with slope $m = 2$
3. Sketch the function $f(x) = x^2 + 1$ and $g(x) = -2x$ on the same axes

Lesson: Polynomial function terminology, the power rule

Homework: Deltamath calculus practice

GQ: How do we graph tangents to functions?

CCSS: HSF.IF.C8.A Understanding rate of change

6.3 Friday 28 February

Do Now: Differentiation of polynomials practice

1. Find the derivative of $h(x) = x^2 + 5$
2. Given $g(x) = x^3 + 12x^2 - 1$. Find $g'(x)$
3. Given $f(x) = x^3 + 7$.
 - 3.1 Find $f(-1)$
 - 3.2 Find $f'(x)$
 - 3.3 Find the derivative of f when $x = -1$.
 - 3.4 Write down the equation of the tangent to f at $x = -1$

Lesson: Apply the power rule for taking derivatives

Classwork: Deltamath calculus practice (finish for homework)

GQ: How do we graph tangents to functions?

CCSS: HSF.IF.C8.A Understanding rate of change

6.4 Monday 2 March

Do Now: $f(x) = x^3 - 5x^2 + 5x + 2$

1. What point does f go through when $x = 1$?
2. Find $f'(x)$
3. What is the slope of the line tangent to the function when $x = 1$?
4. Write down the equation of the tangent to f at $x = 1$
5. Graph the function and its tangent at $x = 1$ on your calculator.
6. Sketch the graph.

Lesson: Using the Casio to calculate derivatives

Classwork: Practice calculator functions (pop quiz warning!)

GQ: How do we graph tangents to functions?

CCSS: HSF.IF.C8.A Understanding rate of change

6.4 Monday 2 March

Calculator practice

1. Find the solutions for the system, $f(x) = g(x)$.

$$f(x) = -2x^2 + 5x + 7 \qquad g(x) = -2x + 4$$

2. Perform a linear regression on the data, finding $y = ax + b$.

x	17	18	17	19	23	15	16
y	71.1	78.6	69.2	71.2	80.5	55.7	58.4

- 2.1 Write down the value of a , b .
- 2.2 Write down the correlation coefficient r .
- 2.3 Use your regression line to estimate y for $x = 22$.
3. $a = 12.3$, $b = 14.7$, $\theta = 71^\circ$. Find the third side length, c .
4. $a = 11.4$, $b = 17.1$, $c = 16.0$.

GQ: How do we graph tangents to functions?

CCSS: HSF.IF.C8.A Understanding rate of change

6.5 Tuesday 3 March

Do Now Quiz: Calculator functions D

1. Solving systems of equations with handheld technology
2. Linear regression
3. Using the Casio to calculate derivatives

Classwork: Deltamath calculus Equations of tangent lines

Homework: Complete Deltamath

GQ: How do we solve for extrema?

CCSS: HSF.IF.C8.A Understanding rate of change

6.6 Thursday 5 March

Do Now: Calculator functions E

1. Solving systems of equations with handheld technology
2. Statistical summary of frequency table data
3. Using the Casio to calculate derivatives

Classwork: Solving for horizontal tangent lines

Homework: Practice calculator functions (quiz tomorrow!)

GQ: How do we solve for extrema?

CCSS: HSF.IF.C8.A Understanding rate of change

6.7 Friday 6 March

Do Now Quiz: Calculator functions F

1. Tangent to a polynomial function
2. Solving systems of equations with handheld technology
3. Statistical summary of frequency table data
4. Using the Casio to calculate derivatives

Classwork: Solving for horizontal tangent lines

Homework: Practice calculator functions

GQ: How do we solve for extrema?

CCSS: HSF.IF.C8.A Understanding rate of change

6.8 Monday 9 March

Do Now: Calculator functions G

1. Tangent to a polynomial function
2. Solving systems of equations with handheld technology
3. Complex calculations: Law of cosine applications
4. Using the Casio to calculate derivatives

Lesson: The derivative of a fractional or negative exponent

Solving for horizontal tangent lines; polynomial end behavior, roots

Homework: Deltamath differentiation practice

Practice calculator functions (quiz tomorrow?)

GQ: How do we solve for extrema?

CCSS: HSF.IF.C8.A Understanding rate of change

6.9 Tuesday 10 March

Do Now Quiz: Calculator functions H

1. Tangent to a polynomial function
2. Solving systems of equations with handheld technology
3. Complex calculations: Law of cosine applications

Lesson: Polynomial end behavior, roots

Classwork: Deltamath differentiation practice

Homework: complete Deltamath problem set

GQ: How do we differentiate exponential & trig functions?

CCSS: HSF.IF.C8.A Understanding rate of change

6.10 Thursday 12 March

Do Now: Calculator functions J

1. Tangent to a negative power of x
2. Solving systems of equations with handheld technology
3. Applications of sine function, radians and degrees

Lesson: Polynomial end behavior, roots

Classwork: Solving for extrema algebraically

Homework: Study for quiz, complete Deltamath

GQ: How do we differentiate exponential & trig functions?

CCSS: HSF.IF.C8.A Understanding rate of change

6.11 Friday 13 March

Do Now: Exponential functions review

1. Real world examples: finance, social networking, pandemics
2. Modeling exponential growth algebraically, graphically, numerically
3. Rate of growth calculation, the derivative

Lesson: Derivatives formulas for the exponential and trig functions

Classwork: Deltamath "Function Analysis"

Homework: Complete Deltamath

GQ: How do we differentiate exponential & trig functions?

CCSS: HSF.IF.C8.A Understanding rate of change

6.12 Monday 16 March

Do Now: Exponential functions review

1. Real world examples: finance, social networking, pandemics
2. Modeling exponential growth algebraically, graphically, & numerically
3. Rate of growth calculation, the derivative

Lesson: Derivatives formulas for the exponential and trig functions

Classwork: Deltamath "6.12 Exponential function basics"

Homework: Complete Deltamath