Mathematics Class Slides

Bronx Early College Academy

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2 March 2020

BECA / Dr. Huson / IB Math Unit 6 - Differential Calculus

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

GQ: How do we graph tangents to functions?

CCSS: HSF.IF.C8.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, $f(x) = g(x)$.
   $f(x) = -2x^2 + 5x + 7$ $g(x) = -2x + 4$

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. $a = 12.3$, $b = 14.7$, $\theta = 71°$. 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