



Albert Einstein High School

Summer Task Cover Sheet



Teacher(s): Chris Colwander

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Course: IB Pre-Calculus

- ✓ **Purpose of the Summer Assignment:** To review concepts discussed in Algebra 1, Geometry, and Algebra 2 as well as concepts that will be discussed during 1st Quarter.
- ✓ **Relationship between Summer Task and 1st Quarter Objectives:** Certain topics included in the summer task are essential throughout the entire course. There are also specific concepts, such as Exponential Functions and Logarithmic Functions, which will be covered in depth during 1st Quarter.
- ✓ **Description of the Task:** Students will complete each question in the Summer Task Packet to completion, showing work whenever possible. Student will also ensure that they have a working knowledge of the vocabulary presented on the initial page.
- ✓ **Supportive Resources:** Khan Academy and Youtube Searches

Grading:

- ✓ **DUE DATE:** Tuesday, September 4th, 2018
- ✓ **DEADLINE:** Friday, September 9th, 2018
- ✓ **Grading Category:** Completion
- ✓ **Points:** Indeterminate at this moment in time. Will be based the other assignments in the category and points will be balanced accordingly.
- ✓ **Extent to which the summer task counts towards the marking period grade:** Will count for at most half of your completion grade, which would equate to at most 5% of your overall grade.
- ✓ **Grading Criteria and Rubric:** *(can be attached as a separate sheet)*
 - Between 0%-50% done: No Credit
 - Between 50%-75% done: Half Credit
 - Between 75%-100% done: Full Credit

IB Pre-Calculus Summer Packet

The following list of vocabulary words/phrases should be known if used in a mathematical context.

- Radical
- Real Number
- Irrational Number
- Rational Number
- Integer
- Whole Number
- Natural Number
- Scientific Notation
- Distributive Property
- Absolute Value
- Monomial
- Binomial
- Trinomial
- Polynomial
- Expansion
- Factoring
- Difference of Squares
- Perfect Squares
- Perfect Square Trinomial
- Greatest Common Factor (GCF)
- Least Common Denominator (LCD)
- Congruent
- Similar (In a Geometry context)
- Equiangular
- Equilateral
- Complementary
- Supplementary
- Hypotenuse
- Adjacent Side
- Opposite Side
- Pythagorean Theorem
- Cartesian Plane
- Ordered Pair
- Distance Formula
- Gradient (Slope)
- Parallel
- Perpendicular
- Coincident
- Sine
- Cosine
- Tangent (Triangle Ratio)
- Degrees
- Chord
- Tangent (Circle Geometry)
- Zero Product Property
- Quadratic Formula
- Completing the Square
- Roots
- Discriminant
- Parabola
- Concavity
- Axis of Symmetry
- Vertex
- Extrema
- Domain
- Range
- Variable
- Coefficient
- Function
- Vertical Line Test
- Constant
- Composite Function
- Inverse Function
- Parent Function
- Translation
- Stretch
- Reflection
- Exponent
- Discontinuity
- Asymptote
- Piecewise Function

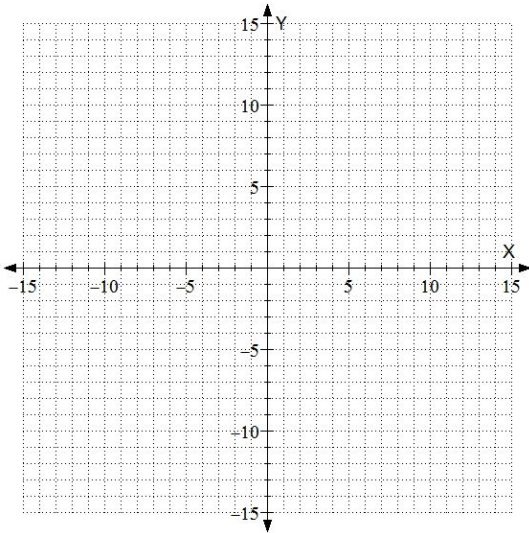
Be prepared to potentially define any of these terms or phrases. As well, be prepared to perform any operations (such as factoring or the Pythagorean Theorem). All of these topics were covered over the course of Algebra 1, Geometry and Algebra 2.

Part 1: Solve each of the following equations for x.

$3x - 7 = 20$	$\frac{5}{6}x + 1 = 26$
$x^2 - 36 = 0$	$35x^2 - 22x + 7 = 4$
$\frac{ -9 + v }{8} = 3$	$-10 v + 2 = -70$
$4^{2x+3} = 1$	$9^x = 49$
$\log(4x - 2) = \log(5 - 5x)$	$-6\log_3(x - 3) = -24$
$\frac{1}{6x^2} = \frac{1}{3x^2} - \frac{1}{x}$	$\frac{1}{x} = \frac{6}{5x} + 1$

Part 2: Graph each of the functions. State the domain, range, and any discontinuities

$$f(x) = -\frac{1}{2}x + 8$$

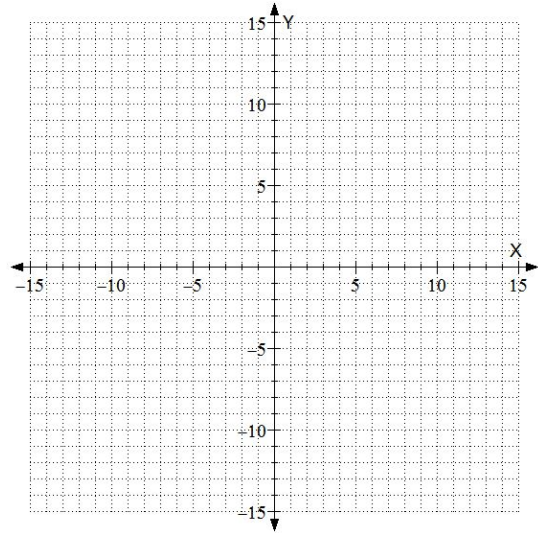


Domain: _____

Range: _____

Discontinuities?: _____

$$f(x) = x^2 + 4x - 12$$

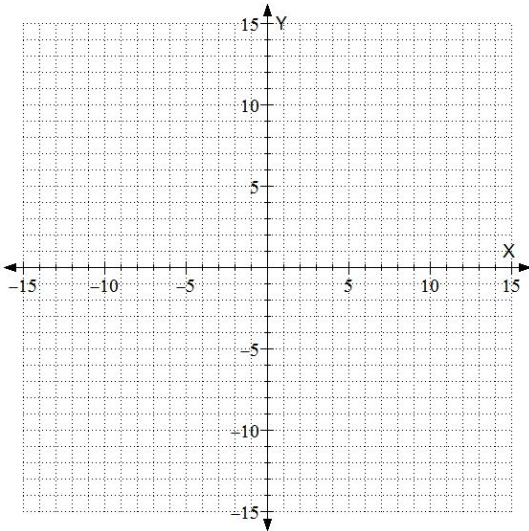


Domain: _____

Range: _____

Discontinuities?: _____

$$f(x) = -2(x + 1)^2 - 7$$

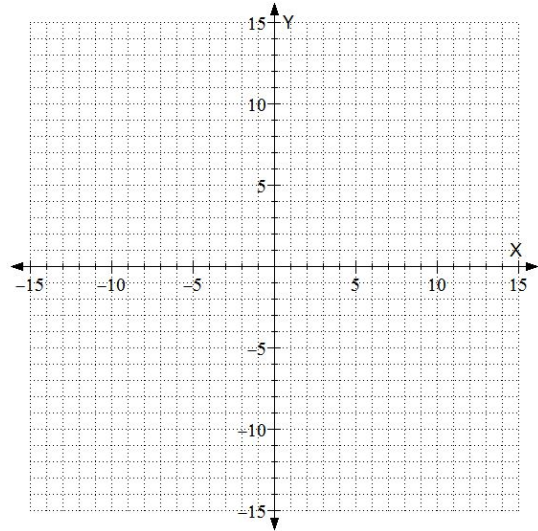


Domain: _____

Range: _____

Discontinuities?: _____

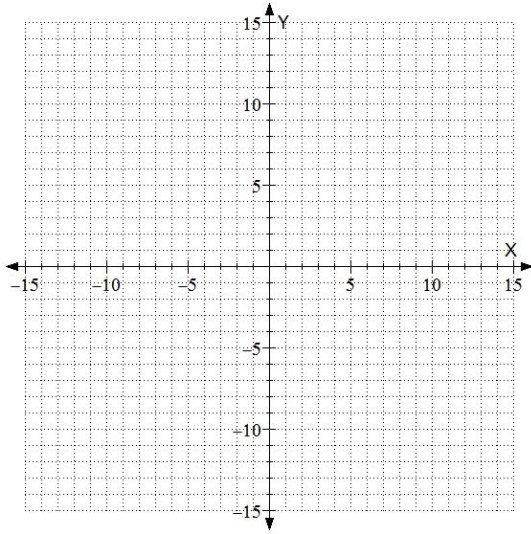
$$f(x) = 2|x - 3| + 4$$



Domain: _____

Range: _____

Discontinuities?: _____

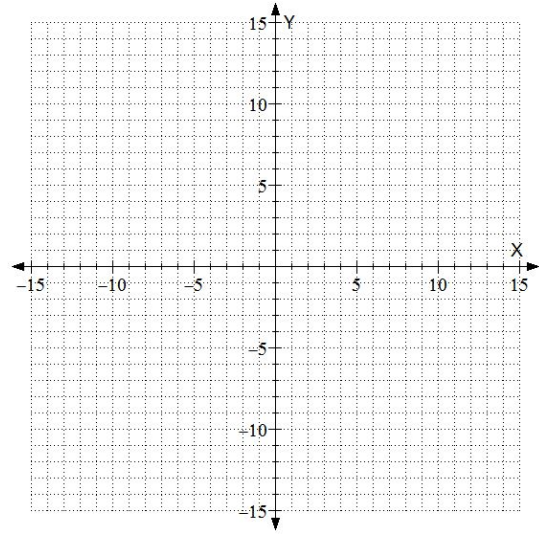


$$f(x) = 2^x - 12$$

Domain: _____

Range: _____

Discontinuities?: _____



$$f(x) = \begin{cases} 3x - 12, & x \leq 9 \\ \sqrt{x - 9}, & x > 9 \end{cases}$$

Domain: _____

Range: _____

Discontinuities?: _____

Part 3: Factor the following expressions

$x^2 - 7x - 18$	$7x^2 + 9x$
$7x^2 - 45x - 28$	$30x^2y - 87xy + 30y$

Part 4: Simplify using exponent rules

$(4x^0)^4$	$(2x^2)^{-4}$
$2x^3y^{-3} * 2x^{-1}y^3$	$\frac{2x^4y^{-4}z^{-3}}{3x^2y^{-3}z^4}$

Part 5: Convert between exponential to logarithmic or vice versa. DO NOT SOLVE

$\log_6 36 = 2$	$\log_7 x = y$
$7^{-2} = \frac{1}{49}$	$3^x = 81y$