



# Albert Einstein High School

## Summer Task Cover Sheet



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**Course:** Pre-calculus/Honors Pre-calculus

- ✓ **Purpose of the Summer Assignment:** To review basic concepts from Algebra 2 and to prepare students for the first quarter of Pre-calculus/Honors Pre-calculus
- ✓ **Relationship between Summer Task and 1st Quarter Objectives:** Characteristics of functions and rational functions are key first quarter concepts.
- ✓ **Description of the Task:** Students will be expected to complete the packet and show all work.
- ✓ **Supportive Resources:** Online resources such as [khanacademy.com](http://khanacademy.com).

### Grading:

- ✓ **DUE DATE:** Wednesday, September 5, 2018
- ✓ **DEADLINE:** Friday, September 7, 2018
- ✓ **Grading Category:** Completed work
- ✓ **Points:** Teacher Discretion
- ✓ **Extent to which the summer task counts towards the marking period grade:** Teacher Discretion
- ✓ **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

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Name \_\_\_\_\_

Period \_\_\_\_\_

### On Level and Honors Precalculus Summer Packet

Answer the following questions. You must show your work to receive full credit.

3) Solve  $3(x + 4)^2 - 162 = 0$  and  $5x = 3x^2 - 1$ .

7) Find  $f^{-1}(x)$  of  $f(x) = \frac{7x-9}{4}$ .

14) The number of bacteria in refrigerated food is given by  $N(t) = 20T^2 - 80T + 500$ ,  $2 \leq T \leq 14$ , where T is the Celsius temperature of the food. When the food is from the refrigerator, the temperature is given by  $T(t) = 4t + 2$ ,  $0 \leq t \leq 3$ , t is in hours. Find the following

- The composite  $N(T(t))$ .
- The number of bacteria when  $t = 2$  hours.
- The time when the number of bacteria reach 2000.

Describe the end behavior of each function.

1.  $f(x) = x^3 + 2x^2 + x - 1$

2.  $g(x) = 8 - x^3 - 2x^4$

$f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow$  \_\_\_\_\_.

$f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow$  \_\_\_\_\_.

$f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow$  \_\_\_\_\_.

$f(x) \rightarrow$  \_\_\_\_\_ as  $x \rightarrow$  \_\_\_\_\_.

1) Answer the following for the polynomial function  $f$ , when  $f(x) = x^4 + 2x^3 - 3x^2 - 4x + 4$ .

a) What is the degree of  $f$ ?

d) What is the end behavior of  $f$ ?

$f(x) \rightarrow \underline{\hspace{2cm}}$  as  $x \rightarrow \underline{\hspace{2cm}}$ .

$f(x) \rightarrow \underline{\hspace{2cm}}$  as  $x \rightarrow \underline{\hspace{2cm}}$ .

f) What is the Domain of  $f$ ?

What is the Range of  $f$ ?

h) Are the following factors of  $f$ ?

1)  $(x - 2)$

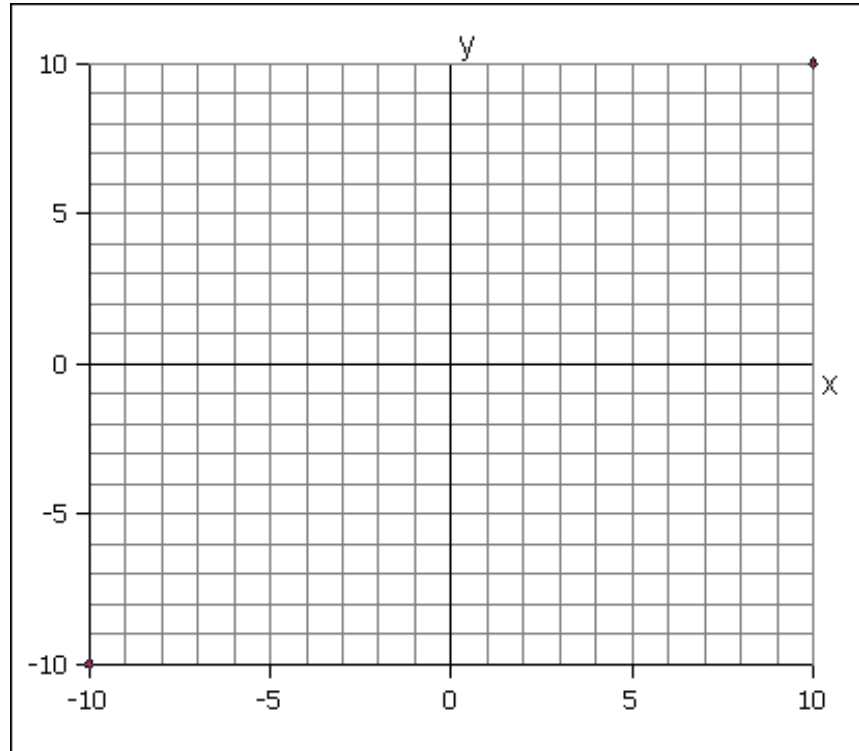
2)  $(x + 3)$

3)  $(x - 4)$

j) Find all the factors of  $f$  and write as a product of linear factors.

1. Given:  $f(x) = \frac{3x+2}{2x-1}$

- a. Sketch the graph of  $f(x)$ . Find all asymptotes, and intercepts and clearly label them on the graph.



- b. State the domain and range of  $f(x)$ .

- c. Describe the end behavior of  $f(x)$ .

- d. Find  $f^{-1}(x)$ .