



Name: _____ Date : _____

IM 3 Quiz 3.1 V1 - Graphs of Polynomial Functions

Teacher: Mr. Santowski and Ms. Aschenbrenner

Score: _____

PART 1 - CALCULATOR ACTIVE QUESTIONS

Maximum marks will be given for correct answers. Where an answer is wrong, some marks may be given for correct method, provided the answer is supported by working. Solutions found from a graphic display calculator should be supported by suitable working, e.g. if graphs are used to find a solution, you should sketch these as part of your answer

1. Given the quartic polynomial $p(x) = \frac{1}{2}x^4 + 2x^3 - 8x^2 - 14x$:

(Total 10 Marks)

- a. Graph the polynomial in an appropriate view window and sketch it on the grid included. State your window settings. (5M)

- b. Determine the co-ordinates of all extrema. (3M)

- c. State the interval of increase of the polynomial. (2M)



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2. You have been provided with a data set that presents the population of PolyTown.

(Total 10 marks)

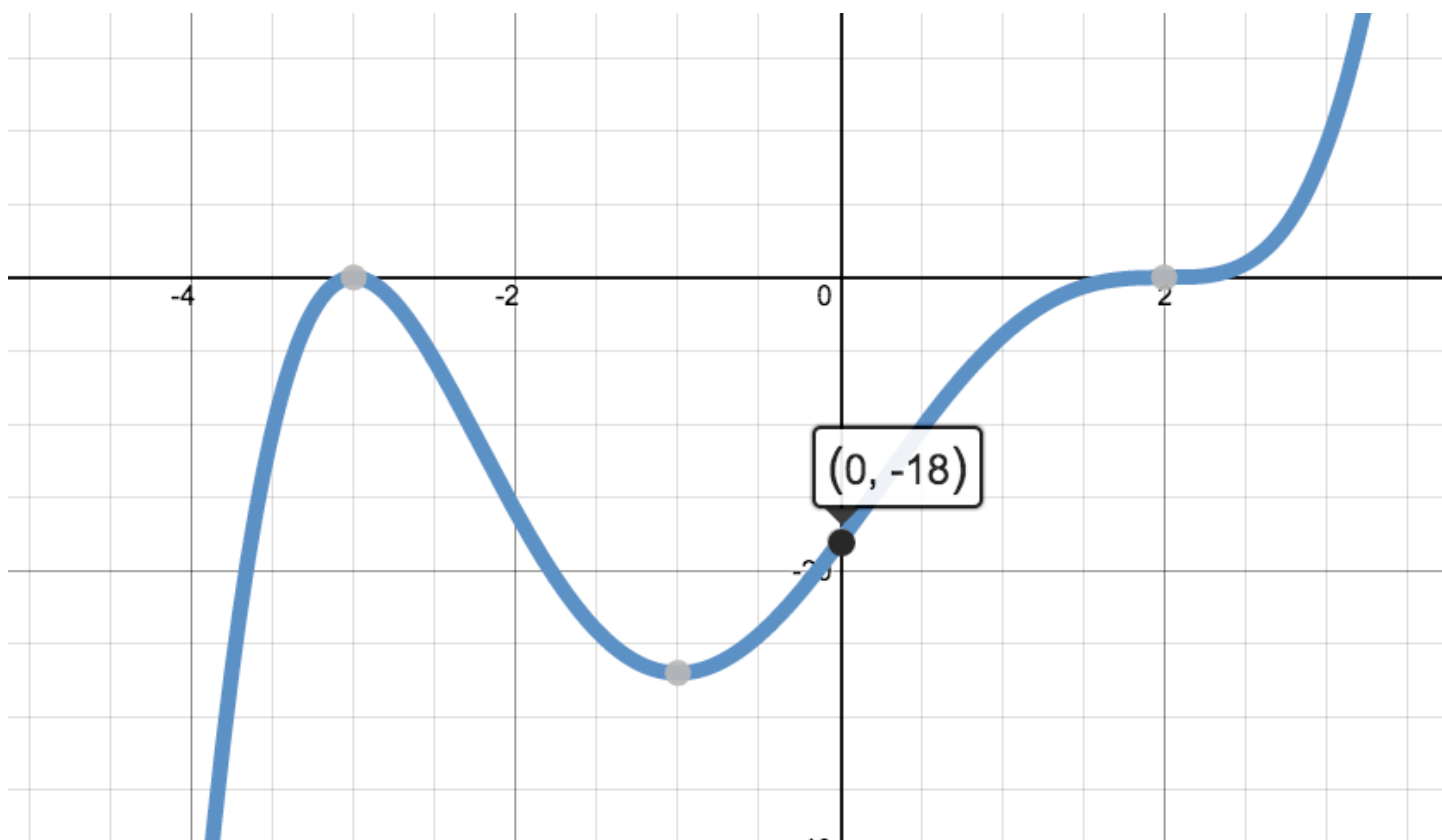
T, years since 2000	0	2	4	6	8	10
Population, in millions	5.3	5.8	6.2	5.0	5.2	6.1

- a. Use the TI-84 to determine the equation of the cubic polynomial that fits the data. Record each coefficient to three decimal places. (4M)
- b. Explain what $P(7) = 5.1$ means, in the context of this problem. (2M)
- c. Use the model to estimate the population in 2012. (2M)
- d. If the population in 2012 was 6.8 million, explain how you would change your model to account for the new data. (2M)

PART 2 - CALCULATOR INACTIVE QUESTIONS

Show all work and write all answers in the spaces provided. Maximum marks will be given for correct answers. Where an answer is wrong, some marks may be given for correct method, provided the answer is supported by written work.

3. From the graph of the polynomial included, determine the equation of the polynomial, including the value of a , the leading coefficient. Leave your final answer in factored form. (Total 5 Marks)





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4. Expand $(x - 3)^2(2x - 1)(x + 2)$

(Total 5 Marks)

5. Sketch a polynomial function that meets the following descriptions: a quintic with two extrema and one zero and as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$.

(Total 4 marks)



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6. The equation of a polynomial is $f(x) = -2(x + 2)^3(2x - 1)^2(x + 5)$. Determine:

(Total 12 Marks)

a. The value of the leading coefficient.

(2M)

b. State the end behaviour of $y = f(x)$.

(2M)

c. The value of the constant term.

(1M)

d. State the zeroes of $y = f(x)$.

(3M)

e. Sketch $y = f(x)$, showing the correct behaviour of the function at the zeroes and at the "ends".

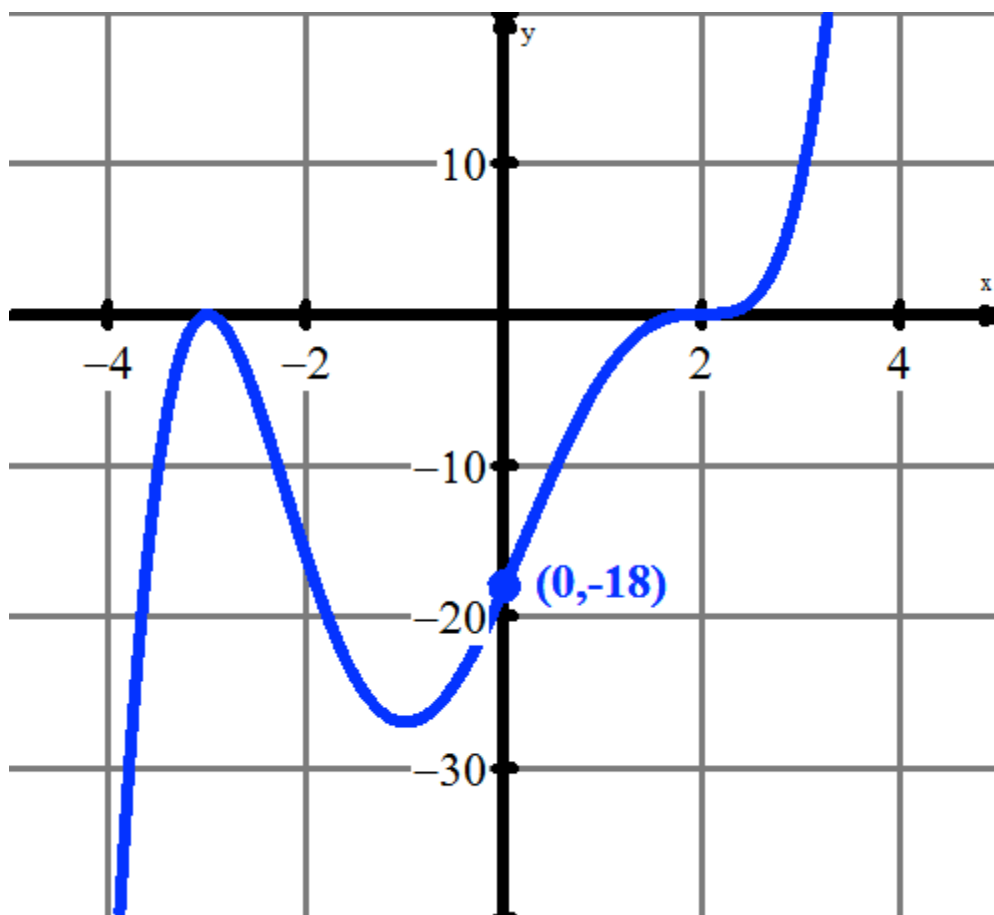
(4M)

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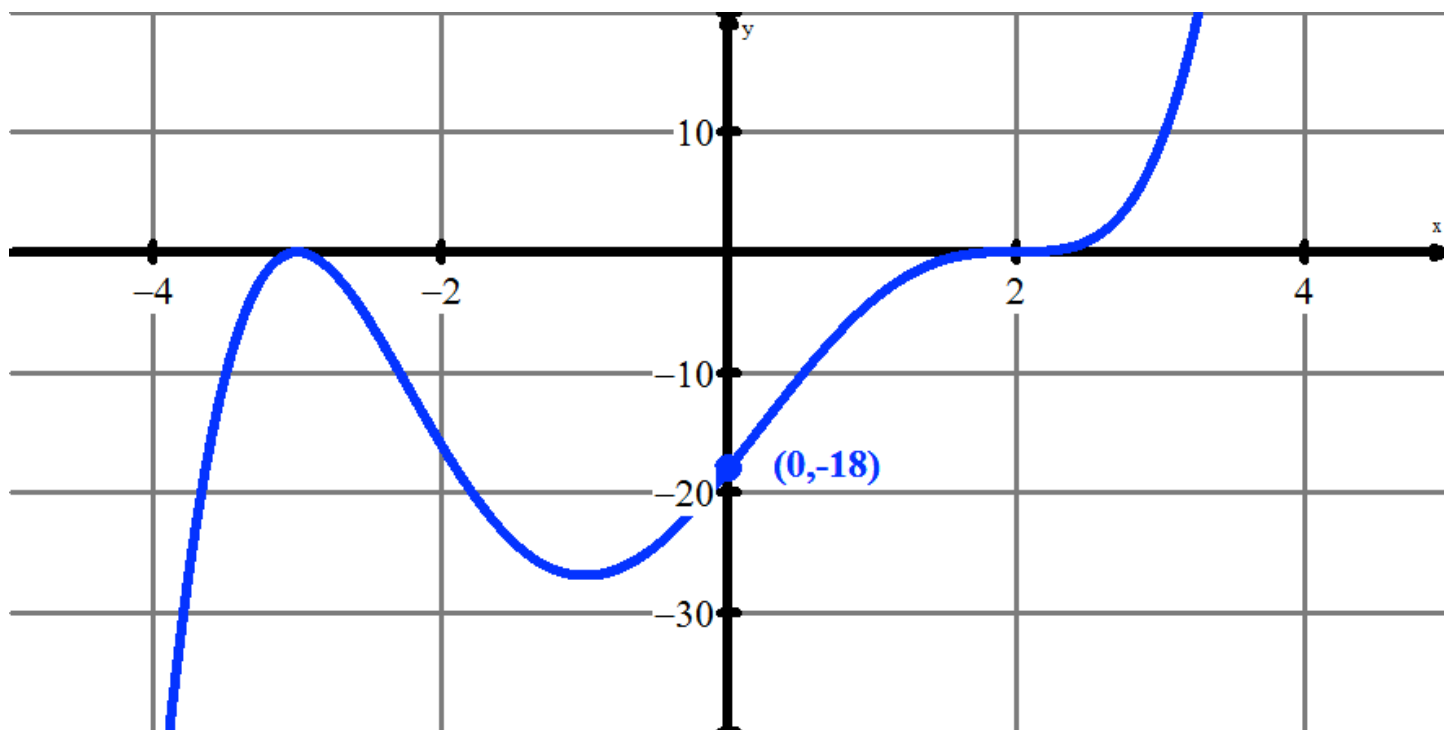
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