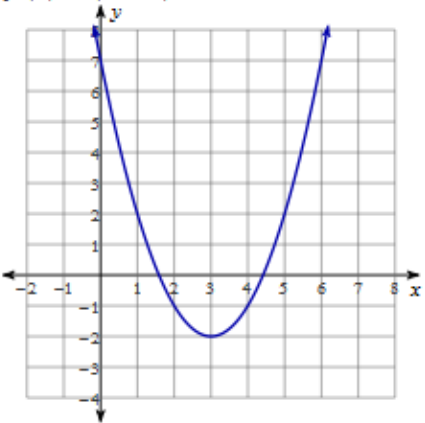
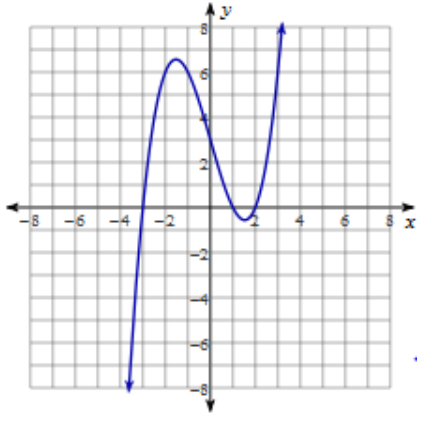


Unit 2 Review: Non- Calculator Portion

2.1: Classifying & End Behavior

Write each polynomial function in standard form. Classify it by degree and number of terms, and determine the end behavior of it's graph (both formally and informally). Lastly, find the turning points by finding the max/min of the function. State the intervals in where the graph is increasing and decreasing.

<p>1) $f(x) = (x - 3)^2 - 2$</p>  <p>Standard Form: Classify Degree: _____ # of Terms: _____ End Behavior (formal): as $x \rightarrow -\infty, y \rightarrow$ _____ as $x \rightarrow \infty, y \rightarrow$ _____</p> <p>End Behavior (informal): Turning Points: Increasing: Decreasing:</p>	<p>2) $f(x) = 0.5(x - 2)(x - 1)(x + 3)$</p>  <p>Standard Form: Classify Degree: _____ # of Terms: _____ End Behavior (formal): as $x \rightarrow -\infty, y \rightarrow$ _____ as $x \rightarrow \infty, y \rightarrow$ _____</p> <p>End Behavior (informal): Turning Points: Increasing: Decreasing:</p>
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2.2: Adding, Subtracting, and Multiplying

Simplify the following polynomials.

3. $(4x^2 + 3x - 5) + (2x + 4)$.

4. $(6x^3 - x^2 + 11x) + (3x^3 - 9x + 6)$

5. $(x^3 - x^2 - 8x + 7) - (2x^2 - 5x - 6)$

6. $(12x^3 - 7x^2 + 4x) - (5x^3 - x^2 - 2)$

7. $(2x + 1)(3x^2 - x + 4)$

8. $(x + 5)(2x - 1)(x - 2)$

9. $(2x^3 - 4x + 1) + (5x^2 - 6x) - (x + 1)(2x - 3)$

2.3: Division: Long & Synthetic

Divide using long division.

10. $(x^3 + 7x^2 + 15x + 9) \div (x + 1)$

11. $(2x^3 - 7x^2 - 7x + 13) \div (x - 4)$

12. $(2x^3 + 9x^2 + 14x + 5) \div (2x + 1)$

13. $(3x^4 + 5x^3 + 2x^2 + 3x - 2) \div (3x - 2)$

Divide using synthetic division. State whether the factor is a root of the polynomial.

14. $(x^3 + 5x^2 - x - 5) \div (x + 5)$

15. $(5x^3 + 8x^2 - 60) \div (x - 2)$

16. $(x^4 - 5x^2 + 4x + 12) \div (x + 2)$

17. $(x^4 - 6x^2 - 27) \div (x + 2)$

18. Determine whether each binomial is a factor of $x^3 + x^2 - 10x + 8$.

a) $x - 2$

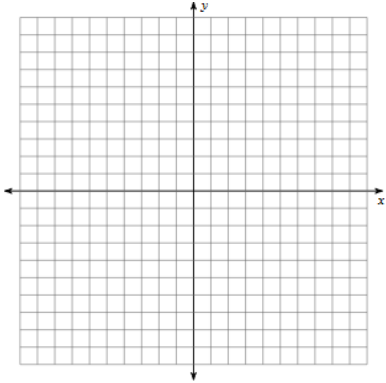
b) $x - 4$

Unit 2 Review: Calculator Portion

2.4: Graphing on the TI84

Use the graphing calculator to find the maximum, minimum, y-intercept, and zeros of each function. Sketch the function. Then state the domain and range.

19. $y = x^4 - 5x^3 + 5x^2 - 3$



Maximums: _____

Minimums: _____

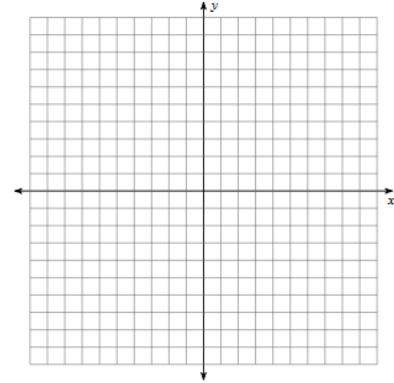
y-intercept: _____

Zeros: _____

Domain: _____

Range: _____

20. $y = 5x^3 + x^2 - 9x + 4$



Maximums: _____

Minimums: _____

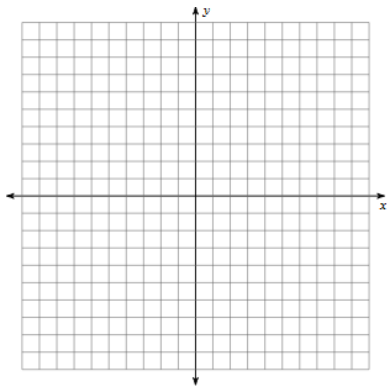
y-intercept: _____

Zeros: _____

Domain: _____

Range: _____

21. $y = -2x^4 + x^3 + 6x^2 - x + 10$



Maximums: _____

Minimums: _____

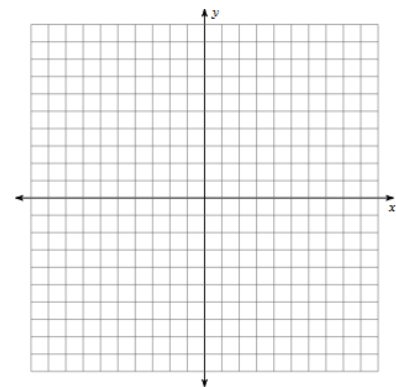
y-intercept: _____

Zeros: _____

Domain: _____

Range: _____

22. $y = -x^3 - 3x + 1$



Maximums: _____

Minimums: _____

y-intercept: _____

Zeros: _____

Domain: _____

Range: _____

2.5: Polynomial Models

23. Write a polynomial function whose graph passes through the points $(0,5)$, $(2,10)$, and $(1,4)$. Round to 6 decimal places.

24. A Tomahawk Cruise ship in the South Pacific misfires a missile. The missile goes over the side of the ship and hits the water. In the data, x is the number of seconds after the missile is launched and y is the number of feet above water for the missile. x | 0_0.5_1_1.5_2_2.5_3; y | 128_140_144_140_128_10_80. View the data in a stat plot. Which function we studied might best fit this data? Find the regression model. After how many seconds will the missile hit the water (according to your model)? What does the model predict the height will be after 4 seconds?

25. Find a linear, a quadratic, and a cubic model for the data. Which model best fits the data? Explain.

x	3	8	15	21
y	7	11	26	44

Linear:

Quadratic:

Cubic:

26. Use CUBICREG to model the data below. Then use the model to estimate the population in 2008. Let x be the number of years after 2000.

<i>Year</i>	2004	2007	2009	2010
<i>Population</i>	457	910	1244	1315

27. The height and width of a rectangular prism are each 2 inches shorter than the length of the prism. The volume of the prism is 40 cubic inches. Approximate the dimensions of the prism to the nearest hundredth.