

Precalculus

Review 2.1-2.5 Homework

Non-Calc

Name _____

1) Find the vertex of the parabola:

$$y = 4(x+6)^2 - 7$$

2) Find the vertex of the parabola:

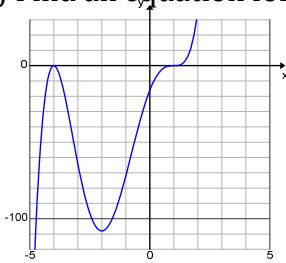
$$f(x) = x^2 - 6x + 72$$

3) Find the x and y-intercepts of the parabola:

$$f(x) = x^2 - 6x - 72$$

4) Write an equation in vertex form for the parabola with vertex at (-4,1) and containing the point (5, -2)

5) Find an equation for the polynomial shown.



6) Write a linear equation if $f(-2) = 4$ and $f(3) = -6$

Describe the end behavior of the equation using limits.

7) $f(x) = 7x^7 - 6x^4 + 5x^3 - 2x + 1$

8) $f(x) = -5x^4 + 3x^2 - 3x + 4$

9) Draw the shape of the graph and find zeros, degree, leading coefficient, and y-intercept:

$$f(x) = -5(x-3)^3(x+2)^2$$

10) Divide using long division: $\frac{5x^4 + 3x^3 - x^2 + 2x - 6}{x^2 + 4}$

11) Use the remainder theorem to find $f(-4)$ if $f(x) = -2x^3 + 3x^2 - 5x + 7$

12) The following are zeros of a cubic polynomial: 2 and $1+2i$

- List all the zeros: _____ (Be sure to add any missing complex zeros.)
- Write in Factored Form: _____
- X-intercepts (Real Zeros): _____ Y-intercept: _____
- Graph:

e. Write in Standard Form: _____

Calculator

13) Completely factor the polynomial and find all zeros (exact answers, no decimals!):

$$f(x) = x^3 + 4x^2 - 7x - 28$$

$$f(x) = 3x^3 - x^2 - 13x - 5$$

14) If a basketball is thrown straight up into the air with an initial velocity of 30 ft/sec from an initial height of 5 feet, will it hit a 20 foot high ceiling? Justify your answer. When will the ball hit the ground (assuming no ceiling impedes its path)? Use the equation: $h(t) = -16t^2 + v_0t + s_0$

15) Find all the zeros and completely factor. $g(x) = 2x^4 - 3x^3 + 7x^2 + 7x - 5$

A {quick} refresh of topics that COULD be included on the Chapter 2.1, 2.3-2.5 Quest

2.1: Linear and Quadratic Functions

- Equations of Lines (Pt.-Slope and Slope-Int. Forms)
- Equations of Parabolas (Standard and Vertex Forms)
- Linear and Quadratic Modeling

2.3: Polynomials

- Graphing Polynomials (no calculator)
- Zeros, Multiplicity
- Y-Intercept
- End Behavior with Limits

2.4: Real Zeros of Polynomials

- Long Division
- Synthetic Division
- Synthetic Substitution/Remainder Theorem
- Factor Theorem
- Finding the real zeros by calculator and synthetic division

2.5: Complex Zeros/Fundamental Theorem of Algebra

- Finding all zeros of a polynomial and writing in factored form
- Complex Conjugate Zeros
- Finding a polynomial from given zeros

P6: Complex Numbers

- Not specifically tested, but included in 2.5 questions