

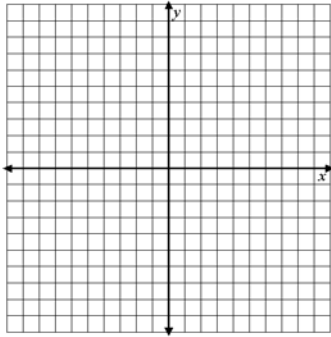
1<sup>st</sup> Semester Ch. 2  
Honors Pre Calculus Review  
Non-Calculator  
Mrs. Wilson

Name: \_\_\_\_\_

Block: \_\_\_\_\_

For 1-2, find the vertex and axis of the function. Sketch the graph and identify at least three points. Label your axis with the scale you chose!

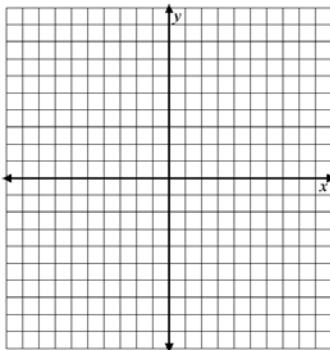
1.  $f(x) = -0.5(x - 2)^2 + 4$



[1] Vertex: \_\_\_\_\_

Axis: \_\_\_\_\_

2.  $f(x) = -5x^2 + 25x + 2$



[2] Vertex: \_\_\_\_\_

Axis: \_\_\_\_\_

3. Write an equation for the quadratic function whose graph contains the vertex  $(-4,3)$  and point  $(-2,-2)$ . Leave in vertex form.

[3] \_\_\_\_\_

For 4-6, determine if the function is a power and/or monomial function. For those that are, state the power and constant of variation, or the degree and the leading coefficient. For those that are not, explain why not.

4.  $f(x) = -3x^{-3}$

[4] \_\_\_\_\_  
\_\_\_\_\_

5.  $f(x) = 12x^{\frac{8}{4}}$

[5] \_\_\_\_\_  
\_\_\_\_\_

6.  $f(x) = 3.9$

[6] \_\_\_\_\_  
\_\_\_\_\_

7. The volume of an enclosed gas (at a constant temperature) varies inversely with the pressure. If the pressure of a 3.46 L sample of neon gas at 302 ° K is 0.926 atm, what would the volume be at the pressure of 1.452 atm if the temperature does not change? (You may use your calculator for this problem).

[7] \_\_\_\_\_

In 8-9, describe the end behavior of the polynomial function using  $\lim_{x \rightarrow +\infty} f(x)$  and  $\lim_{x \rightarrow -\infty} f(x)$

8.  $f(x) = -5x^4 + 3x + 7$

[8] \_\_\_\_\_

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

[9] \_\_\_\_\_

In 10-11, state the degree and the zeros of the polynomial function. State the multiplicity of each zero.

10.  $f(x) = 3x^3 - 18x^2 + 27x$

[10] \_\_\_\_\_

11.  $f(x) = -3x(x+4)^2(x+1)^3$

[11] \_\_\_\_\_

12. Divide and write a summary statement in fraction form and polynomial form.

$$\frac{x^4 - 2x^3 + 3x^2 - 4x + 6}{x^2 + 2x - 1}$$

[12] \_\_\_\_\_

\_\_\_\_\_

13. Write a linear equation for the given information  $f(-2) = 5$  and  $f(3) = -7$ . Put your answer in standard form.

[13] \_\_\_\_\_

14. Find a polynomial function with a leading coefficient of 3 and zeros of  $\frac{1}{3}$ , -1 and 4. Write answer in standard form.

[14] \_\_\_\_\_

15. List all possible rational zeros of the function:  $f(x) = 5x^3 - 7x + 4$

[15] \_\_\_\_\_

16. Find all zeros of the function below given that -1 and  $\frac{3}{2}$  are zeros. Hint: Use synthetic division.

$g(x) = 4x^4 - 4x^3 - 11x^2 + 6x + 9$  [16] \_\_\_\_\_

17. Simplify

(a)  $\sqrt{-16}$  [17a] \_\_\_\_\_

(b)  $\sqrt{-125}$  [17b] \_\_\_\_\_

18. Perform the following operations...

(a)  $(3 - 4i) - (-8 + 2i)$  [18a] \_\_\_\_\_

(b)  $(2 + 9i)(4 - 6i)$  [18b] \_\_\_\_\_

(c)  $\frac{3 + i}{2 - 3i}$  [18c] \_\_\_\_\_

19. Solve algebraically.

(a)  $2x^2 + 20x = -82$  [19a] \_\_\_\_\_

(b)  $x^2 + 6x + 25 = 0$  [19b] \_\_\_\_\_

20. Write a polynomial function in standard form with real coefficients with the given zeros.

(a)  $-2, 4 - 5i$  [20a] \_\_\_\_\_

(b)  $3, 2i$  [20b] \_\_\_\_\_

In 21-22, (a) Find the asymptotes of the function's graph and (b) Tell how the function's graph is related to a hyperbola with the equation of the form  $f(x) = \frac{a}{x}$

21.  $g(x) = \frac{3x+11}{x+2}$

[21a] \_\_\_\_\_

[21b] \_\_\_\_\_

22.  $h(x) = \frac{8x+14}{2x-3}$

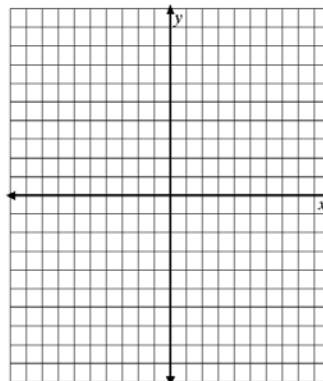
[22a] \_\_\_\_\_

[22b] \_\_\_\_\_

For 23-25, find the asymptotes, intercepts, holes (if any) and graph the function (label at least 1-2 points per region...enough to clearly determine shape!)

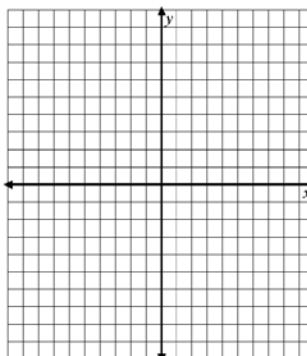
23.  $f(x) = \frac{-2}{(x-3)^2}$

[23]

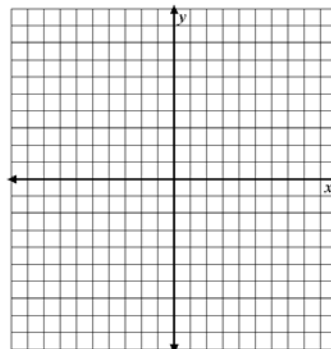


24.  $g(x) = \frac{x}{1-x^2}$

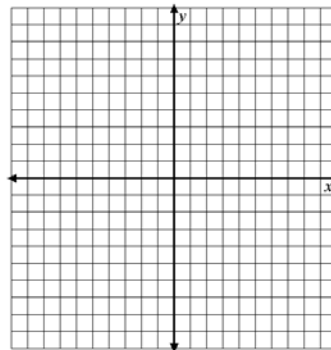
[24]



25.  $h(x) = \frac{x^2 - 1}{x - 1}$  [25]



26.  $g(x) = \frac{x^2 + 2x - 3}{x + 4}$  [26]



27. Determine the real number values that make  $f(x)$  be  
 i) zero  
 ii) positive and  
 iii) negative

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

[27a i] \_\_\_\_\_  
 ii] \_\_\_\_\_  
 iii] \_\_\_\_\_

b)  $g(x) = (x - 7)(3x + 1)(x + 4)$

b i] \_\_\_\_\_  
 ii] \_\_\_\_\_  
 iii] \_\_\_\_\_

28. Solve the inequality

a)  $\frac{x - 3}{|x + 2|} < 0$

[28a] \_\_\_\_\_

b)  $\frac{1}{x + 2} - \frac{2}{x - 1} \geq 0$

b] \_\_\_\_\_

## CALCULATOR

29. The table below shows the number of employees of the gizmo company.

Year	1972	1975	1978	1980	1983	1989
Number of employees	247	475	658	546	493	605

- a. Find the cubic regression equation, using  $x = 0$  to represent 1970. Round the coefficients to the nearest .0001.

[29a]\_\_\_\_\_

- b. Use the regression equation to predict the number of employees in 1985.

b]\_\_\_\_\_

30. Use a grapher go approximate all of the functions real zeros. Round to the nearest .01.

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

[30]\_\_\_\_\_

## Previous Chapter Review

31. Identify the interval in which the function is increasing, decreasing, and/or constant.

$$g(x) = 2x^3 - 3x^2 + 4$$

[31]\_\_\_\_\_

32. Let  $f(x) = x^2 - 1$  and  $g(x) = \frac{1}{x-1}$ . Find and simplify

a.  $g(f(x))$  [32a]\_\_\_\_\_

b.  $\frac{f}{g}(x)$  [32b]\_\_\_\_\_

33. How much 10% solution and how much 45% solution should be mixed together to make 70 gallons of 28% solution?

[33] \_\_\_\_\_

34. Solve:  $-1 \leq 6x + 3 < 9$

[34] \_\_\_\_\_

35. Evaluate the limit based on the graph of the function below.

a)  $\lim_{x \rightarrow -6^-} f(x) =$

b)  $\lim_{x \rightarrow -6^+} f(x) =$

c)  $\lim_{x \rightarrow 5^+} f(x) =$

d)  $\lim_{x \rightarrow 5^-} f(x) =$

