Assignment #2-6   Secondary 3 Honors

PreCalculus Book:

        Pg. 112 69, 70, 72, 73

Additional Problems: Complete these problems of a separate sheet of paper.

Use your calculator to find all of the real zeros and relative extrema for each function to three decimal places.

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

Sketch the following by hand. Find all zeros (determine if they cross or bounce), and determine end behavior.

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

6. Sketch the graph of the function by (a) applying the Leading Coefficient Test, (b) finding the zeros, (c) determining the maximum number of turns, and (d) drawing the curve. $f(x) = x^3 - 9x$

7. Sketch each graph with the characteristics given. If the graph is not possible to sketch explain why.
       a) even degree; increases to x = -2, then decreases to x = 0, then increases to x = 2, then decreases; relative min at y = 1; two absolute maxs at y = 4

       b) degree of 3; negative *a* value; y-intercept at -4; x-intercepts at -5, -1, 2, & 3

       c) always decreasing; y-intercept at -2.5; x-intercept at -3

Write a cubic function with the following characteristics:
8. zeros: x = -5, -1, 4   9. zeros: x = 1, 2i   10. zeros: x = 3(mult 2), x = 1

Find the domain for each function:

11. $f(x) = \dfrac{3-x}{x^2 - 5x}$ 12. $f(t) = \sqrt{7-t}$ 13. $f(x) = 3x^2 - 6x$ 14. $h(y) = \dfrac{y-4}{\sqrt{y-3}}$

15. Find the difference quotient and simplify your answer: $g(x) = 4x - 3$, $\dfrac{g(x+h) - g(x)}{h}$, $h \neq 0$

Solve each quadratic equation. Leave answers in exact form. *No decimals!*

16. $3x^2 - 4x + 5 = 0$ 17. $2x^2 - 40 = 0$ 18. $-4x^2 + x - 3 = 0$