Secondary 3 Honors
Unit 2 Review

Precalculus book
pg 173-178 4, 10 (vertex form), 14, 21-24, 79, 81, 85, 88, 93, 118

Worksheet

1) Given $f(x) = -3x^2 + 24x - 41$, find **without a calculator**:
   a) vertex form
   b) vertex
   c) x-intercepts
   d) y-intercept

2) Solve for x **without a calculator.**
   a) $2x^2 - 6x + 1 = 0$
   b) $3x^2 - 4x - 15 = 0$
   c) $-x^2 + 11x + 12 = 0$
   d) $3(x-1)^2 + 6 = 0$

3) Use your graphing calculator to find a quadratic function in the form $y = ax^2 + bx + c$ that goes through the following points: $(-1, -3), (1, 5), (2, 3)$

4) Simplify **without a calculator.**
   a) i^{43}
   b) i^{30}
   c) i^{-29}

5) Simplify **without a calculator.**
   $\sqrt{-3}(\sqrt{-2} + 4)$

6) <u>Use your calculator</u> to determine if the function is even, odd, or neither
   a) $f(x) = 2x^3 - 5x$
   b) $g(x) = -x^4 + 2x$
   c) $h(x) = \sqrt{|x|} - 2$

7) <u>Use your calculator</u> to graph
 $y = x^4 - 0.9x^3 - 3.4x^2 + 0.3x + 1.3$
   Find each of the following:
   a) zeros
   b) relative max/min
   c) domain and range
   d) Increasing/decreasing intervals

8) Write a polynomial function with **<u>integer</u>** coefficients that has
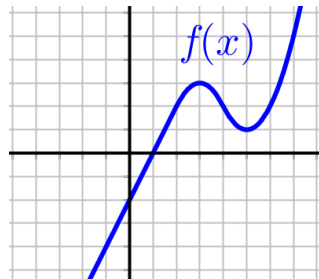 $2i, -\frac{1}{2}, 3, and \frac{5}{3}$ as zeros. You do NOT need to multiply out your answer.

9) Some dude wants two rectangular enclosures against his house for some reason. He has 300 ft of fencing. Find the following:
   a) Area equation in terms of x
   b) Maximum area
   c) Dimensions for maximum area. Include units in your answer.
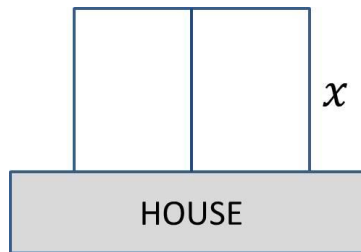
10) Given the graph of $f(x)$, sketch the graph of $2f(x) - 3$

11) Simplify $-3i^{22} + 8i^4$
12) Find the value of the discriminant. Use that value to determine the type of zeros the function has.
   a) $3x^2 + 5x - 7 = y$
   b) $-6x^2 - 4x - 18 = y$
13) Sketch the graph of a quadratic equation that has:
   a) 2 real zeros
   b) 1 real zero
   c) 2 imaginary zeros

14) Graph the following without using a calculator.
   a) $f(x) = x^4 - x^3 - 2x^2$
   b) $(x-2)^2(x+1)(x-3)^4(x)^6$