IM1 Problem Set 50

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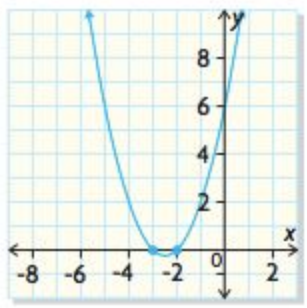
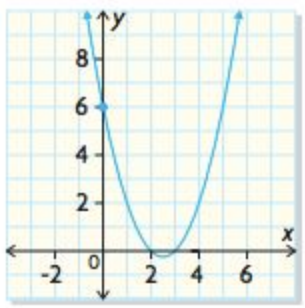
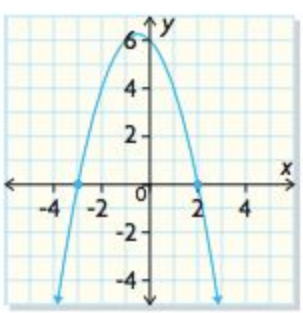
50.1	Use your calculator and a standard view window to graph and analyze the following functions: (Your analysis will include the asymptotes (if any), x- and y-intercepts (if any)) and vertex and axis of symmetry. a. $2x + 5y = -20$ b. $y = x^2 + x - 6$ c. $f(x) = (x + 3)^2 - 4$
50.2	For the following functions, graph them using DESMOS and then answer the following questions about the parabolas ⇒ $y = x^2 - 2x - 8$; $y = (x - 4)(x + 2)$; $y = (x - 1)^2 - 9$ a. What do all the parabolas have in common? b. What is different about each of the equations of the parabolas?
50.3	In a football game, Aly tries kicking the football and the path that the ball travels can be modeled by the function $h(x) = x - \frac{1}{10}x^2$, where h is the height above the ground, in meters, and x is the horizontal distance travelled, in meters, by the ball. a. Evaluate $h(2)$ and explain what this means in the context of the problem. b. Graph the function on your calculator. Write down the window settings that allow you to see the important details of the function. c. When does the ball reach its maximum height? What is the maximum height of the ball? d. When does the ball hit the ground? e. What would the domain and range for this function in this context be?
50.4	For each graph, state the y-intercept, the zeroes, the coordinates of the vertex and the equation of the axis of symmetry i)  iii)  v) 

50.5	Expand and simplify the following polynomial expressions: a. (*i*) $(x + 3)(x - 4)$ (ii) $(2x + 3)(x - 3)$ b. (*i*) $(x + 5)(x - 2)$ (ii) $(2x - 5)(x + 4)$
50.6	The profits of company A, in thousands of dollars, on sales of computers is modelled by the function $P(x) = -2(x - 3)^2 + 50$, where x is in thousands of computers sold. The profits of company B, in thousands of dollars, on sales of phones is modelled by the function $P(x) = -(x - 2)(x - 7)$, where x is in thousands of phones sold. a. Determine the vertices of each company's profit equation. b. Determine the x-intercepts of each company's profit equation and explain what they mean.
50.7	Given the function $y = 2(x + 1)(x - 5)$, use your calculator to help answer the following questions about this quadratic relation a. Create a table of values, using the x values of {-2,-1,0,1,2,3,4,5,6}. b. Determine the equation of the axis of symmetry. c. Find the coordinates of the vertex. d. Find the coordinates of the zeros. e. Find the y-intercepts. f. Determine the maximum OR minimum value.
50.8	Fun times today and thanks for your participation and efforts in this situation. As requested, I am putting the video of the recorded lesson into our shared google folder ==> (address link below) https://drive.google.com/drive/folders/12SwzmIuNrofSFnJxpHtQ67tCcCTp7LSN