1. (20 points) Answer questions about the following curves or functions. Show your work!

(a) \[ x^2y + y^2x = 0 \]

(i) Is this symmetric with respect to the \(x\)-axis? 
(ii) Is this symmetric with respect to the \(y\)-axis? 
(iii) Is this symmetric with respect to the origin? 
(iv) Why is this NOT the graph of any function \(y = f(x)\)?

(b) \[ f(x) = 0.6x^5 - 3x^3 - 1 \]

(i) Is the function \(f(x)\) even, odd or neither? 
(ii) What is the \(y\)-intercept of \(f(x)\)? 
(iii) Use your calculator to sketch the graph of \(y = f(x)\). 
(iv) Use your calculator to find all the zeros of \(f(x)\).
2. (a) (10 points) Find the solutions of the equation $6x^2 - 17x + 12 = 0$.

(b) (10 points) Find the domains of the functions $f(x) = \frac{x + 1}{x^2 - 5x + 6}$ and $g(x) = \sqrt{4x + 28 - x^2}$. 
3. *(20 points)* Find the equations of the following lines. Write your final answer in the slope-intercept form.

(a) The line passing through points \((1, -2)\) and \((4, 3)\).

(b) The line passing through the point \((5, -2)\) and perpendicular to the line \(2x - 3y = 4\).
4. (a) (10 points) Let $y = f(x)$ be the graph given below.

(i) Write the values $f(-1), f(3), f(-8)$.

(ii) Write the coordinates (i.e. $(x,y)$) of the relative maxima.

(iii) Write the coordinates (i.e. $(x,y)$) of the relative minima.

(b) (10 points) Draw the line $y = -\frac{2}{3}x - 4$ on the grid above. At how many points will the line intersect the graph of $y = f(x)$?
5. (20 points) Match the lines with their graphs in (a)–(d).

(a) \(2x + 3y = 6\)  \hspace{1cm} \text{Graph: } 

(b) \(2y + 3x = 0\)  \hspace{1cm} \text{Graph: } 

(c) \(2x - 3y = 6\)  \hspace{1cm} \text{Graph: } 

(d) \(3y = 4x\)  \hspace{1cm} \text{Graph: } 

(e) Find the equation of the line in the last graph. ________________________________