**Midterm Assessment Project**

**Work must be shown for credit**. Directions: Answer/complete the questions below. Unless otherwise specified, all questions MUST be typed, with the equation editor used for all math equations. Untyped answers will not be graded. All examples must be your own. They cannot be from the homework, internet, or book. Examples that come from the homework, internet, or book will be considered plagiarism and you will receive a 0 on this Project. All work must be at the college level and proper grammar must be used. **Your final submission MUST be a PDF.** Please make sure to carefully follow all these directions since this is worth 10% of your overall grade.

All answers should be in exact form (improper simplified fraction, simplified radical, etc) NO DECIMALS. All intervals must be in interval notation.

(Total Points- 635)

1. (228pts total) Mapping Your Mind: The goal of this project is to organize the material learned in each unit in our minds, and to show me you know what you have learned. To do this, we will use mind-mapping software called Miro. Miro is free software that enables you to organize your thoughts digitally and share these thoughts with anyone on the Web. By organizing your thoughts, you can see the big picture and then communicate this big picture to others. You are also able to see how various concepts are related to each other.
	1. (3pts) Go to <https://miro.com/mind-map/> and register.
		1. View this video for instructions on how to use the basics of Miro. Be aware that he shows some options that require the paid version. You are not required to use anything that requires the paid version. I will also show you in the Project Video how to properly share your link. <https://youtu.be/1k5BQGO3t5I?si=CMHFtH9EPNeqoeCq> (This video is 12min long. If you are good with this type of software and want to skip a long-ish video, you can follow these directions instead <https://miro.com/mind-map/how-to-make-a-mind-map/> )
	2. (25pts) Use an Internet search engine to research Mind Mapping. Type a brief of history and benefits of mind mapping. This should be a complete college level paragraph, or more, with college level grammar.
	3. (100pts each- 200 total) Create a MindMap for each unit that explains and connects the concepts, key terms, formulas, techniques, and applications. When creating your map, be creative! Share ideas about when a technique might be used, or when a particular technique cannot be used. Each MindMap should be huge. I should have to scroll in and out on my 27” monitor to view all the information. If it is viewable on an 8x12 screen or paper, you are missing things.
		1. You will be graded on “completeness”- did you include all the concepts, methods/techniques, key terms, applications, formulas etc. and were you able to link/connect concepts/methods/key terms across the different sections. If you want to include pictures/screenshots of examples, you may but (with the exception of graphs) everything else (key terms, techniques, concepts, etc.) should be your own words/typing.
		2. Share your MindMap links here so that I can view them. Once you have saved as your project as a PDF double check to make sure your links still works. Be sure to change the settings of your MindMap to “Anyone with the link can view” so that I can view it. Label each link Unit 1, Unit 2 appropriately.
2. (100pts) Create 2 linear equations (in two variables). I suggest making the numbers weird to ensure the equations are not found in your book, the internet, notes, etc. Type out a “how to solve” using Gauss-Jordan Elimination (matrices). This MUST be typed (templets for the matrices are on the last page of this project) and easy to follow. Each step should include an explanation. (For 25 bonus points, create 3 linear equations in three variables instead of 2 equations in two variables).
3. (107pts total) Create a piecewise function, $f(x)$, that includes a linear, quadratic, cubic, square root, cube root, and absolute value. They all need to include at least one translation. The translations must be different, and all types of translations must be represented at least once (vertical shift, horizontal shift, vertical compression, horizontal compression, vertical stretch, horizontal stretch, reflection over the x-axis, and reflection over the y-axis. (12pts) These need to be typed in proper piecewise function format (there is a templet you can use on the last page of this project). Describe the effects of each translation (12pts). Graph your piecewise function both by hand (36pts) and using technology (12pts), then find the following. (If a requested value for parts c-e are not in your domain, state that, then pick a number in your domain to solve for.)
	1. (10pts) Domain of $f(x)$
	2. (10pts) Range of $f(x)$
	3. (5pts) $f\left(12\right)$
	4. (5pts) $f\left(-100\right)$
	5. (5pts) $f(0)$
4. (100pts) Create an example (word problem) using a hobby, or something that interests you, to “teach” Quadratic Function Applications (Sec 7.1) that includes graphing. Create a video explaining this concept, including how to find the vertex, intercepts, and graph and how they relate to your example. After you have created your video, upload it to any platform (except TikTok) that allows you to share a link, then post the link appropriately below, making sure it includes the entire web address in case the link fails (I can then copy and paste the link). Examples of platforms include YouTube (NO Shorts), Vimeo, DropBox, etc. Each video should be no longer than 5min. Be aware that if you decide to share it on something like Instagram it needs to be set to public so that I can view it. Once you have all the links added and saved your project as a PDF, double check to make sure your links still works.
5. (100pts) Send me an email requesting a polynomial for your project. Include a screenshot of my response (2pts). Using the polynomial I send, create a video that teaches how to graph it, including how to find the zeros (this covers Sec 7.2-7.4). After you have created your video, upload it to any platform (except TikTok) that allows you to share a link, then post the link appropriately below, making sure it includes the entire web address in case the link fails (I can then copy and paste the link). Examples of platforms include YouTube (NO Shorts), Vimeo, DropBox, etc. Each video should be no longer than 5min. Be aware that if you decide to share it on something like Instagram it needs to be set to public so that I can view it. Once you have all the links added and saved your project as a PDF, double check to make sure your links still works.

In the Word version, these can be used to help you set up some of your problems. You can copy, paste, and edit them. Please use them to at least set up your initial system. You may use them to finish your work, or you may show your by writing it out on a piece of paper then adding it as a picture to your assignment. ***Be sure to delete this portion before turning in your project.***

Some keyboard shortcuts…

Alt+ will insert a blank equation.

^ will make a superscript or exponent $x^{2}$

\_ will make a subscript like $x\_{1}$

/ will make a fraction $\frac{1}{2}$

$\left[\begin{matrix}5\\6\end{matrix}\right]$

$\left[\begin{matrix}\\\end{matrix}\right]$

$\left[\begin{matrix}\\\\\end{matrix}\right]$

$f\left(x\right)=\left\{\begin{array}{c}x,\\x,\\x,\\x,\\x,\\x,\end{array} \begin{matrix}x<a\\a\leq x<b\\b\leq x<c\\c\leq x<d\\d<x\leq e\\x>f\end{matrix}\right.$