

Directions:

- Complete the exercises below and either write up or type up your solutions. Solutions must be submitted as PDF or Word documents, uploaded to the appropriate assignment area on Blackboard.
 - If you choose to submit handwritten work, it must be neat and legible; if you do your handwritten work on paper, it must be **scanned to a PDF file** and submitted to Blackboard. Instructions and practice for scanning work to PDFs is given in the Startup Assignment. **Do not just take a picture, and do not submit a graphics file (JPG, PNG, etc.)** — such submissions will not be graded.
 - Your work will be graded using the EMPX rubric and evaluated **not just on the basis of a right or wrong answer, but on the quality, completeness, and clarity of your work**. Therefore you need to show all work and explain your reasoning on each item.
 - Every item must have a good-faith effort at a complete and correct response. If any item is left blank, or shows minimal effort (such as answering "I don't know"), or is significantly incomplete, the entire assignment will be graded "X" (Not Assessable) and you will have to spend a token to revise it.
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1. For each of the following values of a and b , use the Euclidean Algorithm to determine $\gcd(a, b)$. Then, using the Extended Euclidean Algorithm, find integers x and y such that $ax + by = \gcd(a, b)$.
 - (a) $a = 99, b = 24$
 - (b) $a = 54321, b = 12345$
2. (a) Determine whether the following statement is true or false, and give a sound argument for your answer:

There exist integer solutions to the equation $99x + 24y = 1$.

 - (b) Determine all the values of n for which the equation $99x + 24y = n$ *does* have a solution. Give a sound argument for your answer. (Note: Actually solving the equation is not required and is not a good way to answer this question!)
3. This week, instead of a video response, I want you to respond to a brief survey that is intended to gauge how things are going for you in the course after three weeks. You can find it here: <http://gvsu.edu/s/1AF>