

M303D Practice Final

This is a conglomeration of previous finals and practice finals. Solutions won't be provided.

1. Use Gauss-Jordan elimination to find the inverse of $\begin{pmatrix} 3 & 4 \\ -1 & -2 \end{pmatrix}$
2. Sketch a curve that represents the graph of a reasonably interesting function $y = f(x)$. Then sketch the graph of $y = f(x - 3) + 2$.
3. Find the equation of the line through the points $(2, 3)$ and $(-5, 6)$.
4. Sketch the graph of $y = -4x^2 + 16x - 15$, showing the vertex and all intercepts.
5. Solve the equation $5^{3-x} = 7$.
6. Evaluate $\log_5 \frac{1}{\sqrt{5}}$.
7. Solve $\log_{10}(x - 2) + \log_{10}(x - 3) = \log_{10} 6$.
8. \$ 2000 is deposited at 5% compounded monthly. Write an expression for the balance after 7 years.
9. If you deposit \$100 every month into an account bearing 6% annual interest compounded monthly, how many years will it take to amass \$1,000,000?
10. Use Gauss-Jordan elimination to solve the system

$$\begin{aligned}x + 2y + 3z &= 1 \\2x + 3y + 4z &= 3 \\x + 2y + z &= 3\end{aligned}$$

11. Problem 51 on page 257.
12. Problem 37 on page 287.
13. Maximize $P = 3x + 4y$ subject to the constraints:

$$\begin{aligned}3x + 5y &\geq 30 \\x + y &\geq 8 \\x, y &\geq 0\end{aligned}$$

14. Sketch a graph of $y = -2x^2 + 4x + 6$, showing the vertex and all intercepts.
15. Solve the equation $3^{2x-1} = 5^x$.
16. Evaluate $\log_6 2 + \log_6 3$.
17. How long will it take \$1000 to double if it is deposited at 6% annual interest compounded monthly?
18. You borrow \$8,000 at 6% annual interest compounded monthly for your new Kia Sophia. What should your monthly payment be if you want to pay off the loan in 3 years?