Test III 157 (The Last One!!)

Place your name in the upper right hand corner. Place your answers in the blanks at the left. If you are hoping for partial marks you should show your work on a separate sheet.

__________ 1) Solve for ‘x’,  \( 3^x = 0.333 \)

__________ 2) Solve for ‘x’,  \( \log_x (81) = 4 \)

__________ 3) Solve for ‘x’,  \( \log_3(x) = 3 \)

__________ 4) Solve for ‘x’,  \( \ln(4x) \square \ln(3) = \ln(4) \)

__________ 5) Solve for ‘x’,  \( \log(x \square 8) + \log(x \square 2) = 1 \)

__________ 6) Solve for ‘x’,  \( 9 = e^x \square e^{2x} \)

__________ 7) Suppose you invest 50,000$ and it grows continuously at a rate of 9% per year. How much do you have after 20 years?

__________ 8) Suppose you invested 30,000$ in an investment that accrued interest continually. If after 10 years you had 60,000$ what was the interest rate?

_________________________ 9) Solve for x, y and z.

\[
\begin{align*}
3x + y & = 2z = 2 \\
x \square 2y + z & = 0 \\
2x \square y \square 3z & = \square 2 \\
\end{align*}
\]

For the following problems let \( A = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \) and \( B = \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix} \).

__________ 10) Compute, \( AB \) and \( BA \).

__________ 11) Compute, \( A-B \) and \( B-A \).

__________ 12) Solve for x, y, and z.

\[
\begin{align*}
y + z & = a \\
x \square y & = b \\
x \square y \square z & = c \\
\end{align*}
\]

13) Bob invests 5000$ in three different one year investments that pay a total of 320$ in simple interest. The interest rates are 5%, 7%, and 8%. There is 1500$ more invested at 7% than at 5%. How much is at each rate?

14) Orange juice, a bagel, and a coffee from Kelly’s Koffee Kart costs a total of 3$. Kelly raises the prices such that the price of orange juice will increase by 50% and the price of a bagel will increase by 20%. After this increase the same purchase will cost 3.75$ and orange juice will cost twice as much as coffee. Find the original prices.