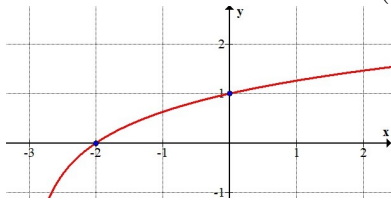


Write your answers on the lines provided below then attach your work on additional paper. If you cannot print this document, then you must write out each problem statement before your solution. You are allowed to use books, notes, websites, however all work must be your own and you must provide steps for credit. Answers without steps only earn 20 percent credit. Scan your work and post it as a pdf in Blackboard(5pts). See Announcements for further advice.

Problem 1: (5pts) Let $f(x) = \log(9 - x^2)$. Find domain of $f(x)$ in interval notation;

$$\text{dom}(f(x)) = \underline{\hspace{4cm}}.$$

Problem 2: (8pts) Find values for b, c such that $y = \log_b(x - c)$ describes the graph given below: notice the blue dots are at $(-2, 0)$ and $(0, 1)$ respectively.



$$b = \underline{\hspace{2cm}} \text{ and } c = \underline{\hspace{2cm}}.$$

Problem 3: (10pts) Use the laws of logarithms to combine the following expressions:

(a.) $\log_7(x^2 - 9) - \log_7(x + 3) - \log_7(x - 3) = \underline{\hspace{4cm}}.$

(b.) $\frac{\ln(x + 4)}{\ln 8} + \log_8(x) = \underline{\hspace{4cm}}.$

Problem 4: (32pts) Solve the following equations and write your solution(s) in the blank provided. If there is more than one solution, separate answers with a comma.

(a.) $2^x - 11 = 5$ gives solution(s) $x = \underline{\hspace{4cm}}.$

(b.) $e^{2x} - 2e^x - 3 = 0$ gives solution(s) $x = \underline{\hspace{4cm}}.$

(c.) $\log(x) + \log(x + 2) = \log(24)$ gives solution(s) $x = \underline{\hspace{4cm}}.$

(d.) $\ln x = 3 \ln 2$ gives solution(s) $x = \underline{\hspace{4cm}}.$

Problem 5: (5pts) Let $\cosh(x) = \frac{1}{2}(e^x + e^{-x})$. Calculate $\cosh(\ln(3))$. Leave answer as rational number.

$$\cosh(\ln(3)) = \underline{\hspace{4cm}}.$$

Problem 6: (10pt) If $f(x) = \ln(3\sqrt{x+2})$ then find $f^{-1}(y)$.

$$f^{-1}(y) = \underline{\hspace{4cm}}.$$