

1. (8 points) Solve this equation for x :

$$2(10^{x-5}) = 44$$

2. (8 points) Solve this equation for x :

$$\log_3 x + \log_3(x + 8) = 2$$

3. (8 points) Suppose a sequence is generated by the function $a_n = \frac{(-2)^n}{n+2}$

(a) What is the domain of the function in this situation?

(b) What are the first three terms of the sequence and the *20th* term of the sequence?

4. (10 points) Consider the function $g(x) = \ln(x + 3)$.

(a) State the domain of $g(x)$.

(b) Use transformations to sketch the graph of $g(x)$. State what transformations you applied, clearly label any asymptotes, and clearly label at least one point on the graph.