

6. Let $f(t) = \log_3(7t + 9) - 3$. In the space provided, show how you arrived at each answer.

(a) Using interval notation, the domain of f is _____.

(b) Using interval notation, the range of f is _____.

(c) The vertical intercept is the point _____.

(d) The horizontal intercept is the point _____.

(e) The equation of the vertical asymptote is _____.

7. The exponential function $y(x) = Ce^{\alpha x}$ satisfies the conditions $y(0) = 2$ and $y(1) = 1$. Find the constants C and α . What is $y(2)$?

8. One hundred kilograms of a radioactive substance decay to 36 kg in 10 years. How much remains after 47 years? ROUND ANSWER TO 4 DECIMAL PLACES.

9. A cup of coffee contains 104 mg of caffeine, which leaves the body at a continuous rate of 15% per hour. Use logarithms to find the half-life of caffeine. ROUND ANSWER TO 4 DECIMAL PLACES.