

1. The number of people at people infected with the insatiable thirst for math after t minutes is modeled by the function

$$W(t) = \frac{15430}{1 + 182e^{-0.34t}}$$

For each of the following give the three decimal approximation then round to the nearest person or minute. (use approx. sign) Show all work that leads to your answer.

- (a) What was the initial number of people infected?
- (b) After how many minutes will the number of infected people be 5000?
- (c) After how many minutes is the infection be spreading the fastest rate?
- (d) How many people are infected after an hour and a half?
- (e) According the model, what is the population of people?
- (f) After how many minutes will the number of infected people reach 37% of the total population?

2. For $f(x) = \frac{7}{5} + \frac{3}{4}(.003)^{\left(\frac{5}{4}-4x\right)}$

(a) Write $f(x)$ in standard transformation form and describe the transformations.

(b) Find the **simplified, exact value** of the y -intercept. Show the work that leads to your answer.

(c) Sketch $f(x)$ showing the basic shape, y -intercept, and any/all asymptotes.

(d) Find D_f :

(e) Find R_f :

(f) Find the **Equation(s)** of any/all asymptotes. Be sure to label which type they are.