IM3 Quiz 1.2 - Calculator Active

September, 2017

Write down your solutions on the answer sheet provided (do not put your answers on this sheet!)

1. Given the function $f(x) = \frac{1}{x+1} + 2$
   a. Write down the equation of the asymptotes *(2 marks)*
   b. Sketch the function *(2 marks)*
   c. Write down the coordinates of the x- and y-intercepts. *(2 marks)*

2. Given the following linear system:

$$3x + 5y = 6$$
$$y = mx - 4$$

   a. Find a value for m such that this system has no solutions. *(3 marks)*
   b. Suppose $m = 3$, find the solution to the system. *(3 marks)*

3. Tarah works for Mr. D's Speedy Delivery company. She gets $150 per week plus a bonus of 10% of the value of each delivery she makes, up to a total bonus of 350 dollars.
   a. Write an equation modelling Tarah's weekly earnings. *(3 marks)*
   b. Evaluate your equation when Tarah completes $2000 worth of deliveries. *(1 mark)*
   c. Express this equation as a piecewise function. *(3 marks)*
   d. Sketch this function. *(3 marks)*
   e. Find the inverse of your equation, explain in what context Tarah might use this equation. *(3 marks)*
   f. Using the inverse equation, evaluate the total deliveries when Tarah earns $450. *(1 mark)*
   g. Mr. S runs a competing company, and he offers Tarah a flat salary of $325 a week regardless of the amount of deliveries. Given the choice, which company would you advise Tarah to work for? Offer justification/explanation for your answer. *(3 marks)*