2021 Worksheet 8
Year 13 Mathematics

Write the answers in your Exercise Book.

1. Consider the **balanced** function

$$f(x) = \frac{x^2 - 2x - 3}{x^2 - 3x + 2}$$

   (a) Find the x **intercept**.   **(1 mark)**

   (b) Find the y **intercept**.   **(1 mark)**

   (c) Find the equations of the **vertical** asymptotes.   **(1 mark)**

   (d) Give the equation of the **horizontal** asymptote.   **(1 mark)**

   (e) Hence, sketch the **graph** of the function $f(x)$.   **(2 marks)**

2. Consider the functions

   - $f(x) = 9 - 2x^2$,
   - $g(x) = \sqrt{5-x}$ and
   - $h(x) = 2x - x^2$

   (a) Find an expression for $f \, o \, g \, (x)$.   **(1 mark)**

   (b) What is the **domain** of $f \, o \, g \, (x)$?   **(1 mark)**

   (c) What is the **range** of $f \, o \, g \, (x)$?   **(1 mark)**

   (d) Find $f(x) - h(x)$.   **(1 mark)**