1. a) Find the equation of the perpendicular bisector of the points
   A(11, 1) and B(7, -5)
   b) Find the points C, D where the line from part (a) crosses
   the coordinate axes.
   c) Find the equation of the circle that has the points C and D
   as end points of the diameter.

2. Dan Druff was losing his hair at an alarming rate, 10% of his
   hair during a month. Applying 'Grow More' stimulated 200 new
   hairs every month.
   Assuming he started with 20 000 hairs will he ever lose half
   his hair? If so when? Explain your answer.

3. Part of the graph of $y = f(x)$ on separate diagrams sketch
   (i)     $y = f(x) - 2$     (ii)   $y = f(x - 2)$     (iii)   $y = -2f(-x)$
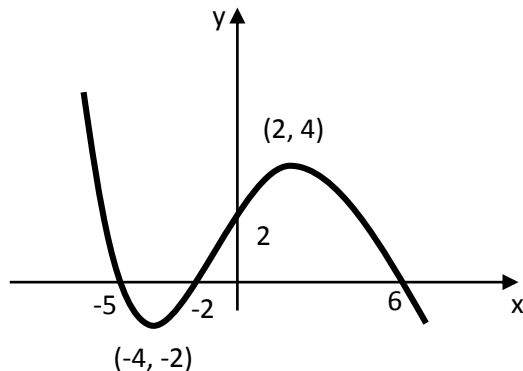


4. Given that $f(x) = 3x - 2$   and $g(x) = x^2 + x$ find formulae
   for:
   (i)      $f(g(x))$     (ii) $g(f(x))$        (iii)  $f(f(x))$    (iv) $g(g(x))$

5. Do these circles intersect?
   $x^2 + y^2 + 6x - 10y + 18 = 0$  and  $(x - 3)^2 + (y + 1)^2 = 4$

6. Find the largest possible domain for the function
   $$f(x) = \frac{2x}{x^2 + 4x - 5}$$

7. What is the maximum value the function $f(x) = 8 - 12x - 2x^2$
   and the corresponding value of $x$ where this occurs?

8. Find the inverse of the following functions:

   a)  $g(x) = 4x + 2$

   b)  $h(x) = \frac{2}{3 - 2x}$