REVIEW Chapter 16   name_____

1 If $f(x) = 2x - x^2$, find: **a** $f(2)$ **b** $f(-3)$ **c** $f(-\frac{1}{2})$

$\boxed{0}$ $\boxed{-15}$ $\boxed{-\frac{5}{4}}$

$\dfrac{7 - -5}{1 - 3} = \dfrac{12}{-2} = -6$

2 Suppose $f(x) = ax + b$ where a and b are constants. If $f(1) = 7$ and $f(3) = -5$, find a and b.

$(1, 7)$ $(3, -5)$

$y = -6x + b$
$7 = -6(1) + b$
$13 = b$
$\boxed{y = -6x + 13}$

$\begin{aligned} 7 &= m + b \\ -5 &= 3m + b \\ \hline 12 &= -2m \\ m &= -6 \end{aligned}$

$\begin{cases} 7 = m(1) + b \\ -5 = m(3) + b \end{cases}$

3) A TV repair man charges $140 for 2 hrs work. If the same TV repair man gets $320 for 6 hrs. of work. Find the amount he charges for just arriving and the amount he charges per hour.

$(2, 140)$ $(6, 320)$

$\begin{rcases} 140 = m\,2 + b \\ 320 = m6 + b \end{rcases}$

$\begin{aligned} 320 &= 6m + b \\ 140 &= 2m + b \\ \hline 180 &= 4m \\ m &= 45 \end{aligned}$

$\boxed{y = 45x + 50}$
    ↑ per hour   ↑ just arriving

$y = 45x + b$
$140 = 45(2) + b$
$50 = b$

4 For each of the following graphs determine:

   i the domain and range   **ii** the x and y-intercepts

   iii whether it is a function.

a   **b**

$D : \mathbb{R}$

$R : [-5, \infty)$

$\left(-1, -\dfrac{25}{9}, (2, -5)\right)$

$D : \mathbb{R}$

$R : -3 \text{ and } 1$
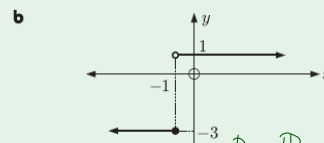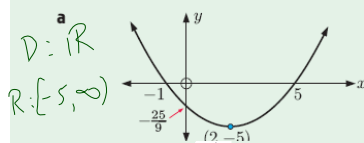
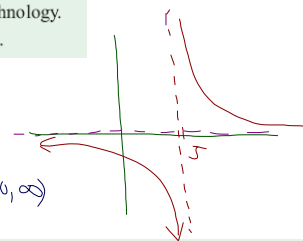**5** Consider $f(x) = \dfrac{1}{x - 5}$

   a For what value of x is $f(x)$ meaningless?

   b Sketch the graph of this function using technology.

   c State the domain and range of the function.

a) $x \neq 5$ **b)**

$(-\infty, 0) \cup (0, \infty)$

c) $D : x \neq 5$ $R : y \neq 0$

6 A marquee hire company charges £130 for setting up and packing down, and £80 per day of use.

   a Construct a table of values showing the cost £C of hiring a marquee for d days, for $d = 0, 1, 2, 3, 4$.

   b Use your table to graph C against d.

   c Use your graph to find the function $C(d)$.

   d The company offers a special deal in which the total cost of a week's hire is £650. How much money does this save?

d	1	2	3	4
C	210	290	370	450

$C = 80d + 130$

$C(7) = 80(7) + 130$
$ = 560 + 130$
$ = 690 \text{ per week}$

$\begin{aligned} 690 \\ -650 \\ \hline \end{aligned}$

$\boxed{40 \text{ in savings}}$