

#### 4.10 Do Now Quiz: Polynomial and rational functions

1. The graph of a function  $f$  is shown on the grid below.

(a) Write down  $f(0) = -1$

(b) Find  $x$  for  $f(x) = 2$ .

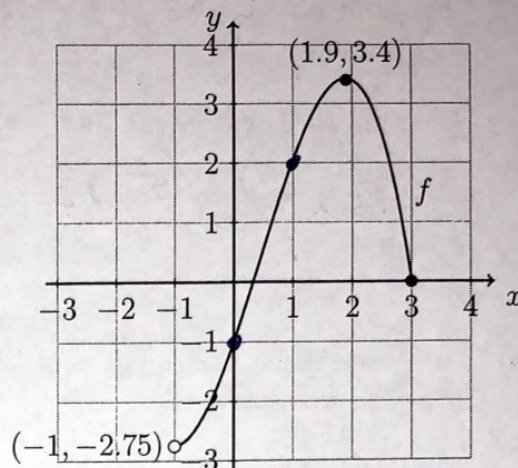
$$x = 1$$

(c) Write down the domain.

$$-1 < x \leq 3$$

(d) Write down the range.

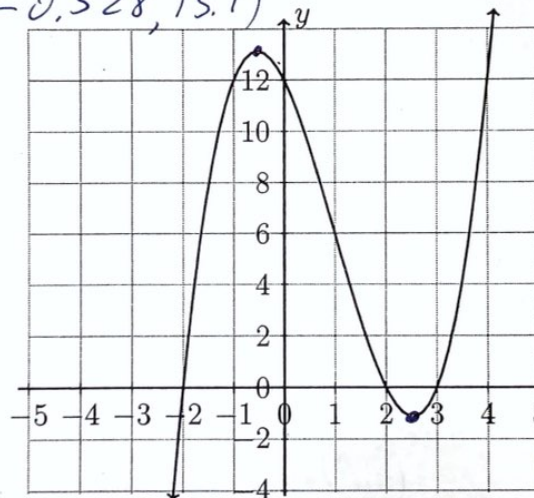
$$-2.75 < y \leq 3.4$$



2. Part of the function  $f(x) = x^3 - 3x^2 - 4x + 12$  is shown on the graph.

local max

$$(-0.528, 13.1)$$



local min

$$(2.53, -1.13)$$

(a) Write down the  $y$ -intercept.

$$12$$

(b) Write down the  $x$ -intercepts.

$$-2, 2, 3$$

(c) Label the local maximum and local minimum as ordered pairs.

(d) Show that 2 is an  $x$ -intercept because  $x = 2$  is a solution to  $f(x) = 0$ .

$$\begin{aligned} f(2) &= 2^3 - 3(2^2) - 4(2) + 12 \\ &= 8 - 12 - 8 + 12 \\ &= 0 \end{aligned}$$

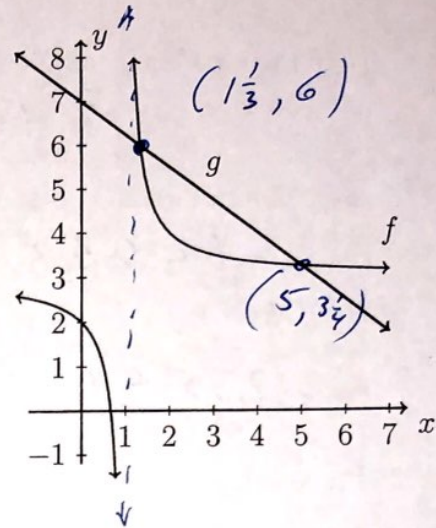
3. The rational function  $f(x) = \frac{1}{x-1} + 3$  and the linear function  $g(x) = -\frac{3}{4}x + 7$  are graphed below.

(a) Find the solutions to  $f(x) = g(x)$ .

$$\left(\frac{1}{3}, 6\right), \left(5, 3\frac{1}{4}\right)$$

(b) Write down the equation of the vertical asymptote to  $f$ .

$$x=1$$



4. Plot the function  $h(x) = x^3 - 4x^2 - x + 4$ , labeling the  $x$ - and  $y$ -intercepts. Mark the local maximum and minimums as ordered pairs.

