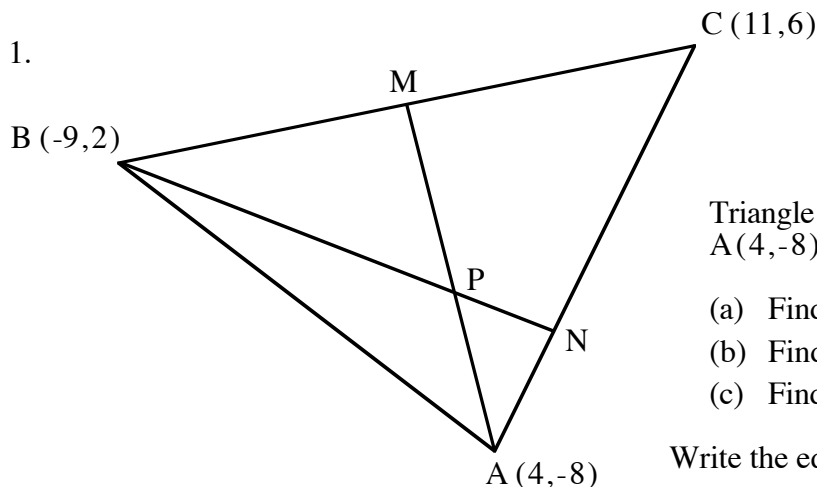


# HOME EXERCISE 3

Set out carefully all appropriate working.



Triangle ABC shown has vertices  
 $A(4, -8)$ ,  $B(-9, 2)$  and  $C(11, 6)$ .

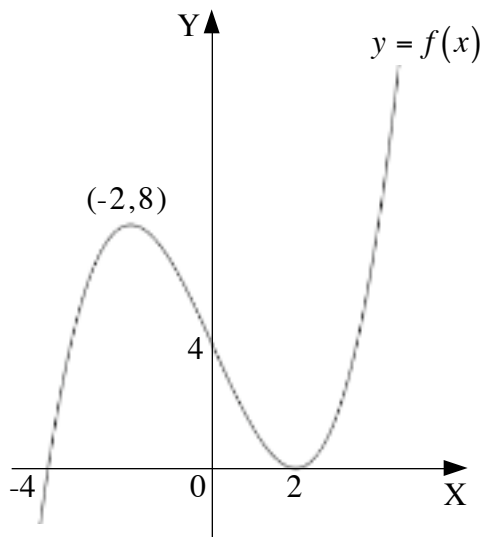
- (a) Find the equation of the **median** AM. (3)
- (b) Find the equation of the **altitude** BN. (4)
- (c) Find their point of intersection P. (2)

Write the equations in the form  $Ax + By + C = 0$ .

2. If  $f(x) = \frac{1}{x}$ ,  $x \neq 0$  and  $g(x) = \frac{x}{1-x}$ ,  $x \neq 1$

- (a) write in simplest form:
  - (i)  $f(g(x))$  (2)
  - (ii)  $g(f(x))$  (2)
- (b) explain why function  $f(x)$  is its own inverse. (1)

3. The graph of  $y = f(x)$  shown has turning points at  $(-2, 8)$  and  $(2, 0)$ .  
 The graph meets the axes at the points  $(-4, 0)$ ,  $(2, 0)$  and  $(0, 4)$ .



For each part (a), (b) and (c) below make a **neat** sketch of the graph required.  
 Annotate the graphs with the images of the four points given on the graph  $y = f(x)$ .

- (a)  $y = f(x) \square 4$ . (2)
- (b)  $y = f(x + 2)$ . (2)
- (c)  $y = \square f(x)$ . (2)

**Total 20 marks**