

## S4 Credit - Homework 2

### Non-calculator section:

1. (a) Evaluate  $39.1 - 33\frac{1}{3}\%$  of 42.12

(b) Express as a single fraction  $(1\frac{1}{2} + \frac{2}{3}) \div \frac{8}{9}$

2. (a) Simplify  $\sqrt{2}(2\sqrt{2} - \sqrt{6})$

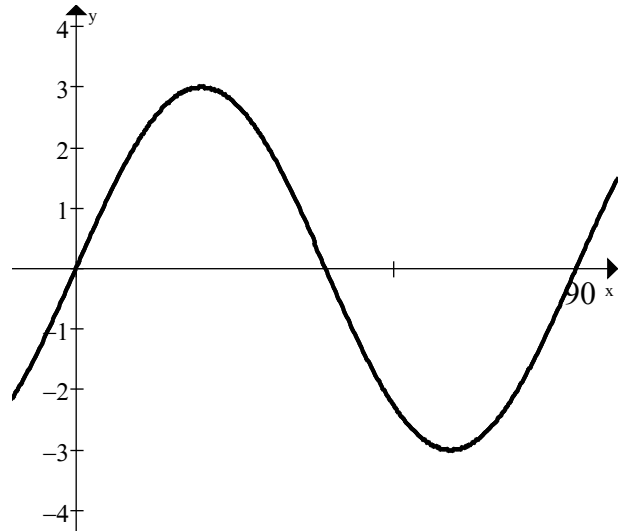
(b)  $f(x) = \frac{3\sqrt{2}}{\sqrt{x}}$ . Express  $f(6)$  with a rational denominator.

3. (a) Factorise  $2x^2 - 8x$

(b) Hence simplify  $\frac{2x^2 - 8x}{3x^2 - 11x - 4}$

4. The diagram opposite shows part of the graph of  $y = a \sin bx$ .

Write down the values of  $a$  and  $b$ .



5. Express  $P = u + \frac{v^2}{w}$  in terms of  $v$ .

6. (a) Simplify  $\frac{a^{\frac{1}{2}} \times 6a^{\frac{5}{2}}}{12a}$

(b) Evaluate  $27^{-\frac{2}{3}}$

7. Express as a single fraction in its simplest form.

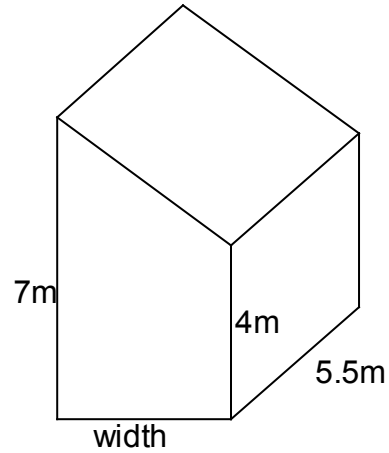
$$\frac{4}{x-1} - \frac{16}{4x+1} \quad x \neq -\frac{1}{4}, 1$$

**Calculator section:**

8. Solve the equation  $4\cos x^\circ - \tan 50^\circ = \tan 40^\circ$   $0^\circ \leq x^\circ \leq 360^\circ$

9. The prism shown opposite has a volume of  $181.5\text{m}^3$ .

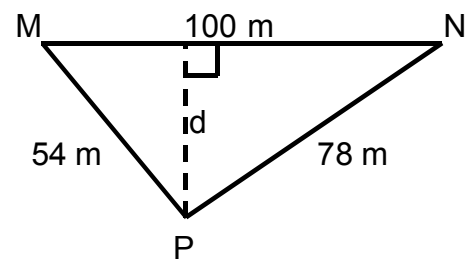
Calculate the width of the cross-section.



10. Solve the equation  $x^2 - 3x = 1$  **giving your answers correct to 3 significant figures.**

11. Two boats M and N locate a wreck, P, on the sea bed. The distances from the wreck to each boat are shown in the diagram.

Calculate the depth,  $d$  metres, of the wreck below the surface.



12. The diagram opposite shows the graph of the parabola with equation

$$y = 2x^2 - 12x$$

- (a) Find the coordinates of the point A.  
(b) Find the coordinates of the minimum turning point of the parabola.

