

S3 Credit - Homework 13

Non-calculator section:

1. Express as a single fraction $4\frac{1}{2} - \frac{3}{4}$ of $2\frac{1}{3}$

2. $f(x) = 2x - 3x^3$. find the value of $f(-2)$.

3. Express $P = \sqrt{u + at}$ in terms of t .

4. (a) Simplify $\sqrt{3}(2\sqrt{3} + \sqrt{6})$

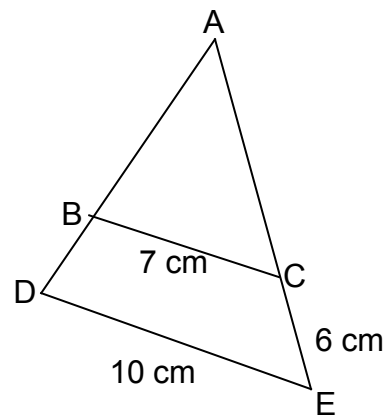
(b) Express $\frac{\sqrt{5}}{\sqrt{40}}$ with a rational denominator in its simplest form.

(c) Simplify $a^{\frac{3}{2}}(3a^{\frac{7}{2}} + a^{-\frac{3}{2}})$

5. In the diagram opposite, triangles ABC and ADE are similar.

BC = 7 cm, DE = 10 cm and CE = 6 cm.

Calculate the length of AC.



6. Express $\frac{2}{x^2} - \frac{1}{3x}$ $x \neq 0$ as a single fraction in its simplest form.

7. Solve the inequation $4 - 2(1 - 3x) < \frac{1}{2}(4x + 12)$

Calculator section:

8. (a) The marks of 7 pupils in an advanced higher maths exam were

71 66 45 88 69 90 75

Calculate the mean and standard deviation of these marks.

(b) Another group of 7 pupils who sat the same exam had a mean of 78 and a standard deviation of 3.2.

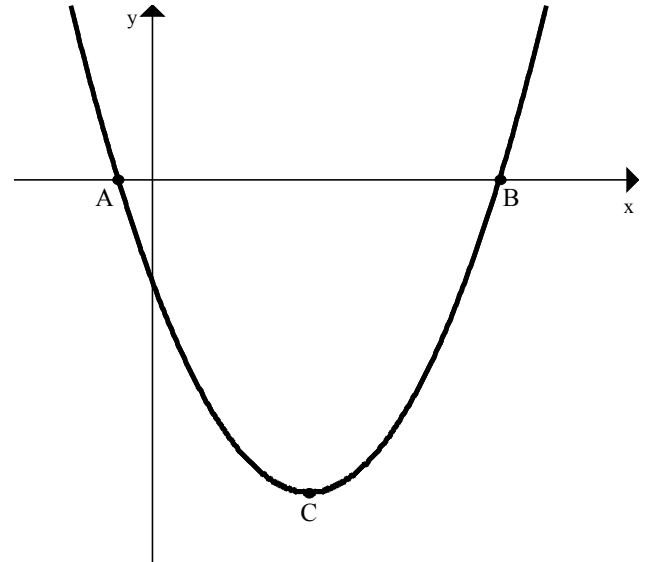
Make two comparisons of the marks of the two groups.

9. Solve the equation $5 \tan 50^\circ + 3 \sin x^\circ = 5.1$ for $0^\circ \leq x^\circ \leq 360^\circ$

10. Solve the pair of equations $4x - 3y = 12$ and $3x = 26 - 2y$

11. The diagram opposite shows the parabola with equation $y = 2x^2 - 9x - 5$.

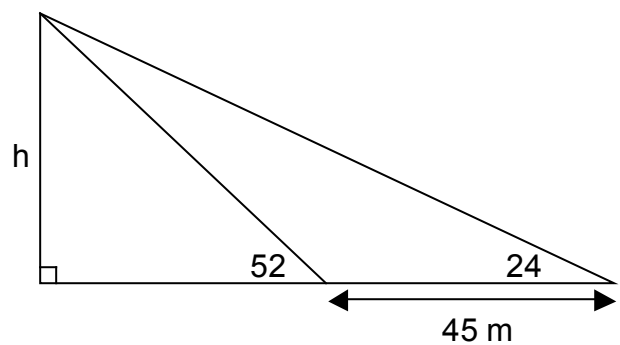
- (a) Find the coordinates of A and B.
 (b) Find the coordinates of C.



12. The value of a boat decreased from £35 000 to £32 200 in one year.

- (a) What was the percentage decrease?
 (b) If the value of the boat continues to fall at this rate, what would its value be after a further 3 years?

13. Calculate h in the diagram opposite.



14. The prisms opposite are similar in shape.

The smaller prism has volume 300 cm^3 ,
 Calculate the volume of the larger prism.
Give your answer correct to 3 sig. figs.

