

S4 Homework – Week 30

Q1. Evaluate:

a. $\frac{4}{5} \times \frac{25}{8}$

b. $\frac{2}{5} + \frac{3}{4}$ of $\frac{1}{2}$

Q2. Expand and simplify:

a. $(x + 3)(x^2 - 2x + 4)$

b. $3(x + 4)(x - 2)$

c. $3(x + 5) + (x - 8)(x + 5)$

Q3. Change the subject of the formula to A:

a. $a = \frac{A}{cd} - e$

b. $F = (AB)^2$

c. $R - AB^2 = 6$

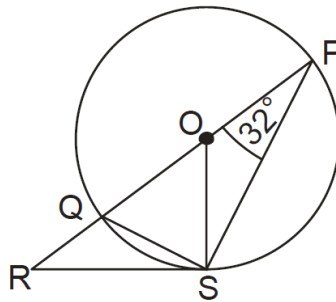
Q4. Two Vectors are shown below:

$\mathbf{r} = \begin{pmatrix} 2 \\ -4 \\ 0 \end{pmatrix}$ $\mathbf{s} = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$

Calculate the magnitude of vector $2\mathbf{r} - \mathbf{s}$.

Q5. In the diagram shown below

- O is the centre of the circle
- PQ is the diameter
- PQR is a straight line
- RS is a tangent to the circle at S
- Angle QPS is 32°



Calculate the size of angle QRS.

Q6. Simplify:

a. $\frac{x^2 + 5x + 6}{x^2 + 4x + 3}$

b. $\frac{4}{x-2} - \frac{3}{x+9}$

Q8. Evaluate the following:

a. $25^{\frac{3}{2}}$

b. $81^{\frac{1}{4}}$

c. $32^{\frac{-2}{5}}$

Q9. A parabola has the equation $y = x^2 + 2x - 15$.

- a. Find the co-ordinates where the graph cuts the y axis
- b. Find the co-ordinates of the roots.
- c. Hence, state the equation of the axis of symmetry.

Q11. A rectangle has a length of $\sqrt{5}$ and a breadth of $\sqrt{10}$
Find a simplified expression for the area of the rectangle.

Q12. Solve for $0 < x < 360$:

a. $7\tan x - 3 = 1$

b. $8\sin x + 4 = 2$

c. $9 - 5\cos x = 10$

Q13. Alistair buys an antique chair for £700.

It is expected to increase in value at the rate of 4.1% each year.
How much is it expected to be worth in 3 years?