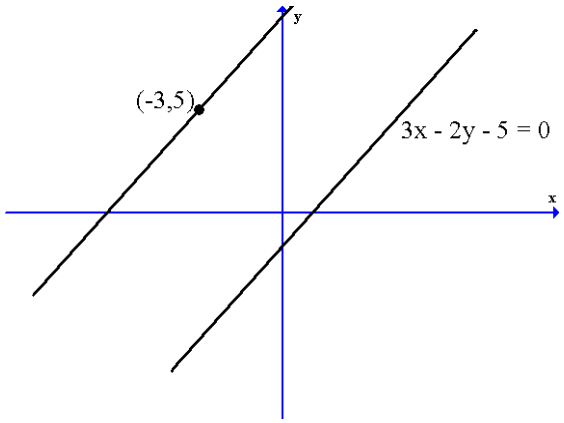
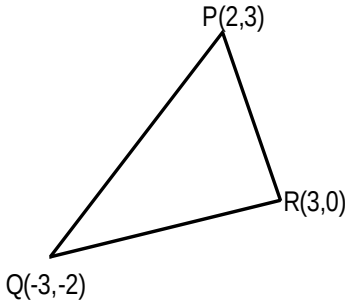
ALBA TUTORING MATHEMATICS
Course Revision Questions
Task Sheet 1

1. Find the equation of the line passing through (-3,5) parallel to the line with equation $3x - 2y - 5 = 0$.



2. The points E and F have coordinates (2,-5) and (4,a) respectively. Given that the gradient of the line EF is ⅔, find the value of a.

3. Triangle PQR has vertices (2,3), (-3,-2) and (3,0) respectively.



(a) Find the equations of the perpendicular bisectors of RQ and PR.
(b) Find the coordinates of T, the point of intersection of these two lines.

4. Solve the equation $6\cos^2 x + \cos x = 2 \qquad 0 \leq x \leq 360$

5. $f(x) = \dfrac{6}{1-x}$ and $g(x) = \dfrac{x-6}{x} \qquad x \neq 0,1$

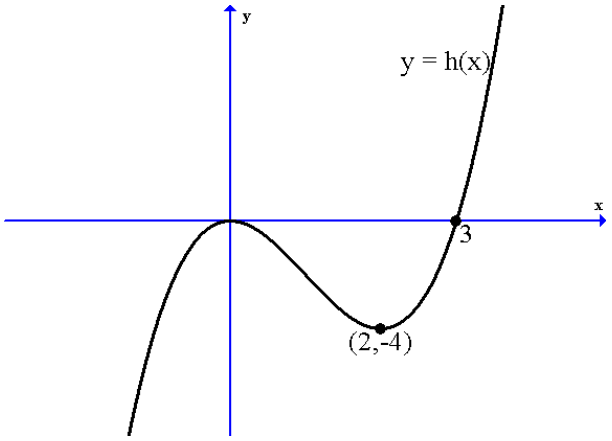
(a) Find a formula for g(f(x)).
(b) State the connection between f(x) and g(x).

6. Find the equation of the tangent to the curve $y = \dfrac{x^2 - 12}{\sqrt{x}}$ at the point where $x = 4$.

7. $f(x) = \sqrt{3}\,x - 1$ and $g(x) = \tan 2x + \sqrt{3}$

(a) Show that $f(g(x)) = \sqrt{3}\tan 2x + 2$
(b) Hence solve the equation $f(g(x)) = 1 \qquad 0 \leq x \leq 2\pi$

8. The diagram shows the graph of y = h(x)

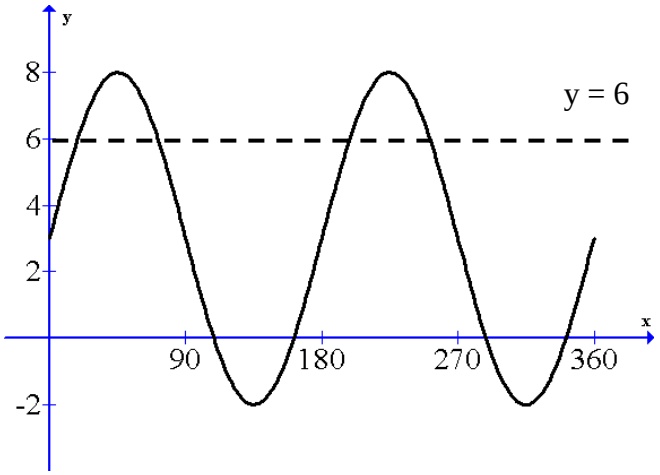


(a) Sketch the graph of y = 2 – h(x)
(b) Sketch the graph of y = 3[h(x – 2)]

9. A straight line AB has equation $5x - 3y - 4$.

(a) Find the angle the straight line makes with the positive direction of the x-axis.
(b) AB is perpendicular to the line CD with equation $ax + 4y + 1 = 0$.
Find the value of a.

10. The diagram opposite shows the graph of y = asin bx + c., passing through (360,3)



(a) Write down the values of a, b and c.
(b) Hence, find the coordinates of the points where the graph meets the line with equation y = 6 for $0° \leq x \leq 180°$