1. [Non Calculator] Find the graident of a straight line where it cuts the positive direction of the x at:

 a. 30^0 b. 45^0 c. 135^0 d. 120^0 e. 90^0

2. A line cuts the positive direction of the at an angle of 60^0 at $(4,0)$. Determine the equation of the line.

3. A line has the coordinates $(2,0)$ and $(3,-\sqrt{3})$. Find the equation of the line.

4. Find the equation of the perpendicular bisector of the line joined by the points $(-3,5)$ and $(1,-3)$.

5. A triangle is created using the coordinates $A(-6,-2), B(4,8)$ and $C(6,2)$. Find the equation of
a. The median through B.
b. The altitude through C.
c. The perpendicular bisector of BC

6. Line CD has the coordinate $(-9,5)$ and is perpendicular to the line $3y - 4x = 9$. Find the equatin of the line CD.

7. [2006, Paper 1]. A traingle has the vertices $A(-1,12), B(-2,-5)$ and $C(7,-2)$.
   - D is the midpoint of AC
   - AE is perpendicular to the line BC.
a. Find the equation of the median BD.
b. Find the equation of the line AE.
c. Find the point of intersection of AE amd BD.

8. [2008, Paper 2] The vertices of a traingle are $A(7,9), B(-3,-1)$ and $C(5,-5)$.
a. Show that the perpendicular bisector of BC is $y = 2x - 5$.
b. Find the equation of the median from C.
c. Find the point of intersection of the median from C and the perpendicular biscetor of BC.

9. [Calculator] A straight line has the equation $3x + 4y = 5$
a. Find the angle the line makes with the positive dircetion of the x axis.
b. Sketch this line. You must state clearly where the line crosses the x and the y axis.

Answers

1.

  a. $\frac{1}{\sqrt{3}}$ b. 1 c. -1 d. $-\sqrt{3}$ e. undef

2. $y = \sqrt{3}x - 4\sqrt{3}$

3. $y = -\sqrt{3}x + 2\sqrt{3}$

4. $y = \frac{1}{2}x - \frac{7}{2}$

5.   a. $y = 2x$
       b. $y = -x + 8$
       c. $y = \frac{1}{3}x + \frac{10}{3}$

6. $y = -\frac{3}{4}x - \frac{7}{4}$

7.   a. $y = 2x - 1$
       b. $y = -3x + 9$
       c. $(2, 3)$

8.   a. Proof
       b. $y = -3x + 10$
       c. $(3, 1)$

9.   a. $m = 143.1^0$
       b. A diagram that shows $\left(\frac{5}{3}, 0\right)$ and $\left(0, \frac{5}{4}\right)$ and the angle 126.9^0