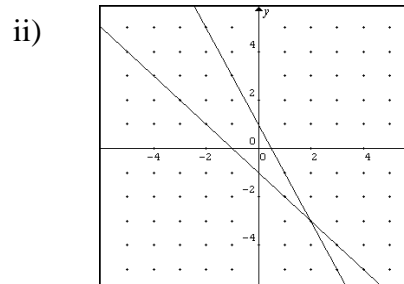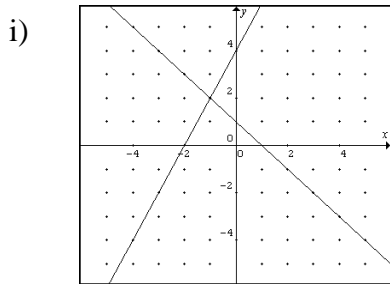1. For each of the following graphs:
   a) determine the equation of each line by finding the slope and intercept.
   b) state the co-ordinates of the point of intersection of the two lines.
   c) verify that this point satisfies the two equations.

   i)

   ii)

2. Determine the slope of:

   a) a line with run of 7 and rise of -3 _____

   b) a line through the points $A(-1,8)$ and $B(3,4)$ _____

   c) a line with an x-intercept of 5 and a y-intercept of 2   _____

   d) a ramp with a horizontal span of 5m and a vertical height of 2m   _____

3. Determine the first differences for each table of values. State which are linear and which are non-linear relations. For each linear relation, state an equation which represents the relation.

   a)

x	y	
1	3	
2	6	
3	9	
4	12	

   b)

x	y	
0	0	
1	1	
2	4	
3	9	

   c)

x	y	
-1	2	
0	0	
1	-2	
2	-4	

   d)

x	y	
1	6	
2	5	
3	4	
4	3	

4. Complete the following table:

equation	slope	y-intercept	slope of a line parallel	slope of a line perpendicular
$y = -\dfrac{2}{3}x - 4$				
	$\dfrac{5}{2}$	$\dfrac{3}{2}$		
		0	-4	
		2		$\dfrac{2}{3}$
$y = -x + 3$				

Answers:

1. a) i) $y = 2x + 4,\ y = -x + 1$ ii) $y = -x - 1,\ y = -2x + 1$ b) i) $(-1, 2)$ ii) $(2, -3)$

2. a) $-\frac{3}{7}$ b) -1 c) $-\frac{2}{5}$ d) $\frac{2}{5}$

3. a) 1st diff's: 3,3,3 ; linear ; $y = 3x$ b) 1st diff's: 1,3,5 ; non-linear

     c) 1st diff's: –2,–2,–2 ; linear ; $y = -2x$ d) 1st diff's: –1,–1,–1 ; linear ; $y = -x + 7$

4.

equation	slope	y-intercept	slope of a line parallel	slope of a line perpendicular
$y = -\dfrac{2}{3}x - 4$	$-\dfrac{2}{3}$	-4	$-\dfrac{2}{3}$	$\dfrac{3}{2}$
$y = \dfrac{5}{2}x + \dfrac{3}{2}$	$\dfrac{5}{2}$	$\dfrac{3}{2}$	$\dfrac{5}{2}$	$-\dfrac{2}{5}$
$y = -4x$	-4	0	-4	$\dfrac{1}{4}$
$y = -\dfrac{3}{2}x + 2$	$-\dfrac{3}{2}$	2	$-\dfrac{3}{2}$	$\dfrac{2}{3}$
$y = -x + 3$	-1	3	-1	1