**Lecture 3**

**Graph of a linear function :**

**The graph of a linear function  *f* is the straight line passing through the two points (** a **,** 0 **) and (** 0 **,** b **) where a is the *x* - intercept of the function *f* and b is the *y* - intercept of the function *f* .**

**Remark : The graph of any linear function *f* has exactly one**

***x* - intercept and has exactly one *y* - intercept .**

**Example 1.2.6: Let  be the linear function defined by  . Find the *x* - intercept and the *y* - intercept of *f* ,**

**then graph the function *f* .**

**Solution:   **

** **

** **

**Therefore the  *x* - intercept is**  **.**

**  the *y* - intercept is** 7 **.**

**Thus the graph of the function *f* is the straight line passing through**

**the two points (** 3.5 **,** 0 **) and (** 0 **,** 7 **) .**

**Thus the graph of the function *f* is** **the following graph**

***y-axis***

(3.5,0)

(0,7)

●

●

***x-axis***

****

(0,0)

**Example 1.2.7: Let  be the linear function defined by  . Find the *x* - intercept and the *y* - intercept of *g* , then**

**graph the function *g* .**

**Solution:   **

** **

** **

**Therefore the  *x* - intercept is **

**  the *y* - intercept is  .**

**Thus the graph of the function *g* is the straight line passing through**

**the two points (,** 0 **) and (** 0 **, ) .**

**Thus the graph of the function *g* is** **the following graph**

***x-axis***

(-3,0)

(0,12)

●

●

***y-axis***

****

(0,0)

**Exercises:**

1. **Let**  **be the linear function defined by**  **.**

**Find the *x* - intercept and the *y* - intercept of *f* .**

**2) Let  be the linear function defined by  .**

**Find the *x* - intercept and the *y* - intercept of *g* .**

**3) Let  be the linear function defined by  .**

**Find the *x* - intercept and the *y* - intercept of *f* , then graph the**

**function *f* .**

**4) Let  be the linear function defined by  .**

**Find the *x* - intercept and the *y* - intercept of *g* , then graph the**

**function *g* .**