4.7 Parameters a and b in y = ax + b

Observations on changing the parameters using: TI-83 or GeoGebra or graphsketch.com

A	$y_1 = x$	$y_2 = 2x$	$y_3 = 0.5x$
type of function	**Direct**	**Direct**	**Direct**
R.O.C. (a)	**1**	**2**	**0.5**
Initial value (b)	**0**	**0**	**0**
Description of line	**Centered in 1st and 3rd quadrants. Increasing line.**	**Steeper than y_1. Increases faster. Bigger angle of inclination.**	**Less steep than y_1. Increases slower. Smaller angle of inclination.**
B	$y_4 = -x$	$Y_5 = -2x$	$y_6 = -0.5x$
type of function	**Direct**	**Direct**	**Direct**
R.O.C. (a)	**- 1**	**- 2**	**- 0.5**
Initial value (b)	**0**	**0**	**0**
Description of line	**Centered in 2nd and 4th quadrants. Reflection of y = x. Decreasing line.**	**Steeper than y_1. decreases faster Bigger angle of inclination.**	**Less steep than y_1. decreases slower. Smaller angle of inclination.**
C	$y_1 = x$	$y_7 = x + 2$	$y_8 = x - 4$
type of function	**Direct**	**Partial**	**Partial**
R.O.C. (a)	**1**	**1**	**1**
Initial value (b)	**0**	**2**	**- 4**
Description of line	**Centered in 1st and 3rd quadrants. Increasing line.**	**Parallel to y_1 Translated (shifted) up 2 units**	**Parallel to y_1 Translated (shifted) down 4 units**
D	$y_9 = 3x + 2$	$y_{10} = 0.5x - 4$	$y_{11} = -2x + 6$
type of function	**Partial**	**Partial**	**Partial**
R.O.C. (a)	**3**	**0.5**	**- 2**
Initial value (b)	**2**	**- 4**	**6**
Description of line	**3 times steeper than y_1 Shifted up 2 units**	**Half as steeper as y_1 Shifted down 4 units**	**2 times steeper than y_1 and reflected Shifted up 6 units**

Conclusions: For every line y = ax + b (the parameters are a and b affect the look of the line)

a : affects the angle of inclination (steepness of line)

b : affects the vertical translation of the line