L7 Graphing and understanding Parameters a and b in y = ax + b

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

A	f(x) = x	g(x) = 2x	h(x) = 0.5x
type of function			
R.O.C. (a)			
Initial value (b)			
Description of line			
B	p(x) = -x	q(x) = -2x	r(x) = -0.5x
type of function			
R.O.C. (a)			
Initial value (b)			
Description of line			
C	f(x) = x	s(x) = x + 2	t(x) = x – 4
type of function			
R.O.C. (a)			
Initial value (b)			
Description of line			
D	u(x) = 3x + 2	v(x) = 0.5x – 4	w(x) = -2x + 6
type of function			
R.O.C. (a)			
Initial value (b)			
Description of line			

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

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A	f(x) = x	g(x) = 2x	h(x) = 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	**p(x) = -x**	**q(x) = -2x**	**r(x) = -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	**f(x) = x**	**s(x) = x + 2**	**t(x) = x – 4**
type of function		**Partial**	**Partial**
R.O.C. (a)		**1**	**1**
Initial value (b)		**2**	**- 4**
Description of line		**Parallel to y_1 Translated (shifted) up 2 units**	**Parallel to y_1 Translated (shifted) down 4 units**
D	**u(x) = 3x + 2**	**v(x) = 0.5x – 4**	**w(x) = -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 steep 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