



## Investigation on transformation of functions

### Part II (Stretch)

**Objective:** In this investigation we will examine the horizontal and vertical stretch in graphs of various functions

*Use of Graphing calculator is required for this activity (Casio cg20 or Casio cg50 is recommended)*

1. Sketch the following curves using your GDC and answer the questions that follow.

- a.  $y_1 = x + 1$
- b.  $y_2 = 2(x + 1)$
- c.  $y_3 = 3(x + 1)$
- d.  $y_4 = 0.5(x + 1)$
- e.  $y_5 = 0.25(x + 1)$

What do you observe by multiplying a function  $f(x)$  by the constant  $p$  in  $y = p \times f(x)$ ?

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2. Sketch the following curves using your GDC and answer the questions that follow.

- a.  $y_1 = x^3$
- b.  $y_2 = (2x)^3$
- c.  $y_3 = (4x)^3$
- d.  $y_4 = (0.5x)^3$
- e.  $y_5 = (0.25x)^3$

What do you observe by multiplying the inputs of a function  $f(x)$  by the constant  $q$  in  $f(qx)$ ?

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Generalize your findings for  $g(x)$  where  $g(x)$  is obtained by  $p \times f(q \times x)$

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