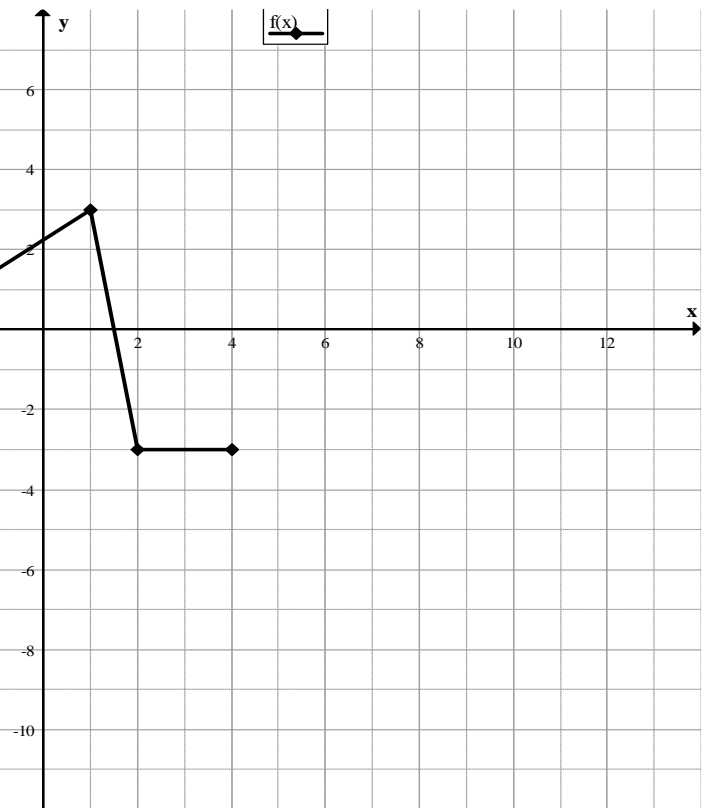


IB Math SL 1 Transformations – Combinations Worksheet Name _____

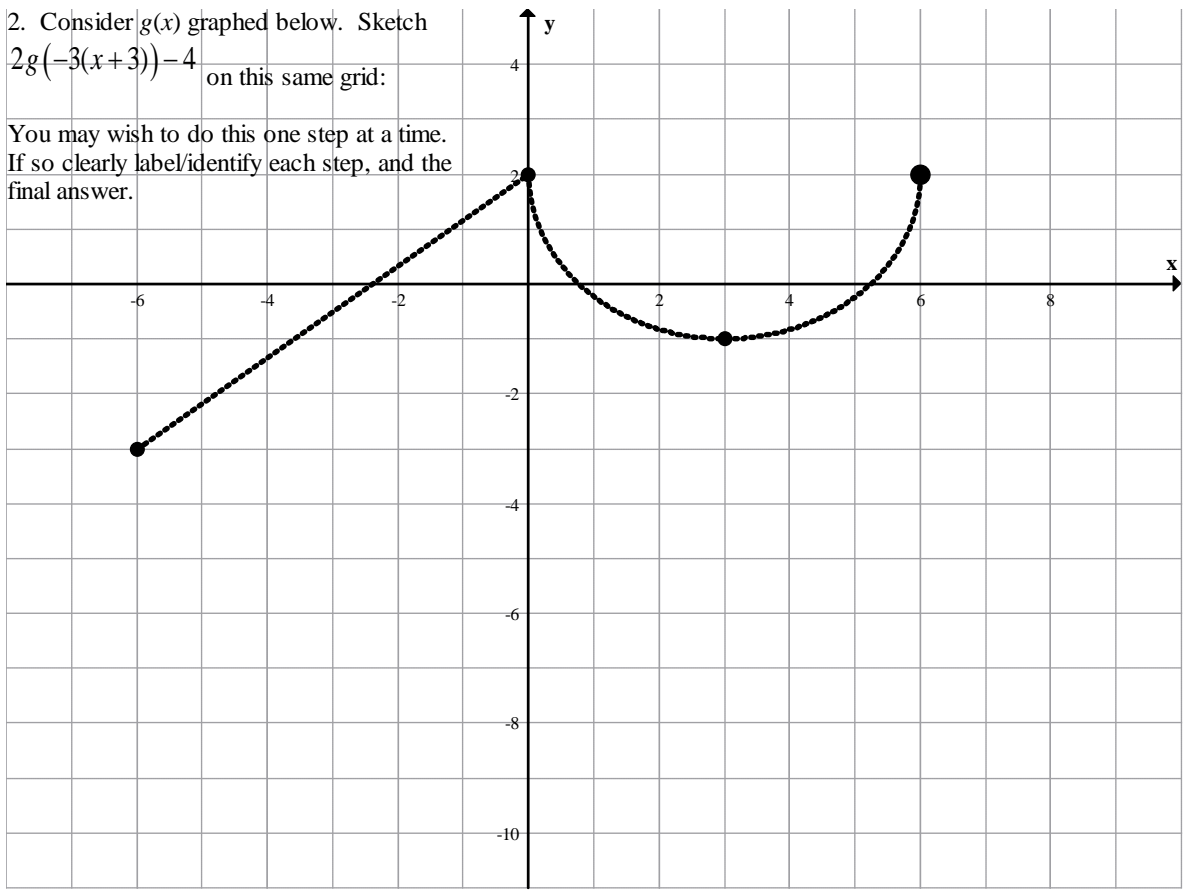
1. Sketch the following on the same grid, using different colors and clear labels for each:

- a) $f\left(\frac{1}{2}x\right)$
- b) $\frac{1}{3}f\left(\frac{1}{2}x\right)$
- c) $-\frac{1}{3}f\left(\frac{1}{2}x\right)$
- d) $\frac{1}{3}f\left(\frac{1}{2}(x-2)\right)$



2. Consider $g(x)$ graphed below. Sketch $2g(-3(x+3))-4$ on this same grid:

You may wish to do this one step at a time. If so clearly label/identify each step, and the final answer.



3. Below is pictured the graph of the parabola:

$$f(x) = x^2$$

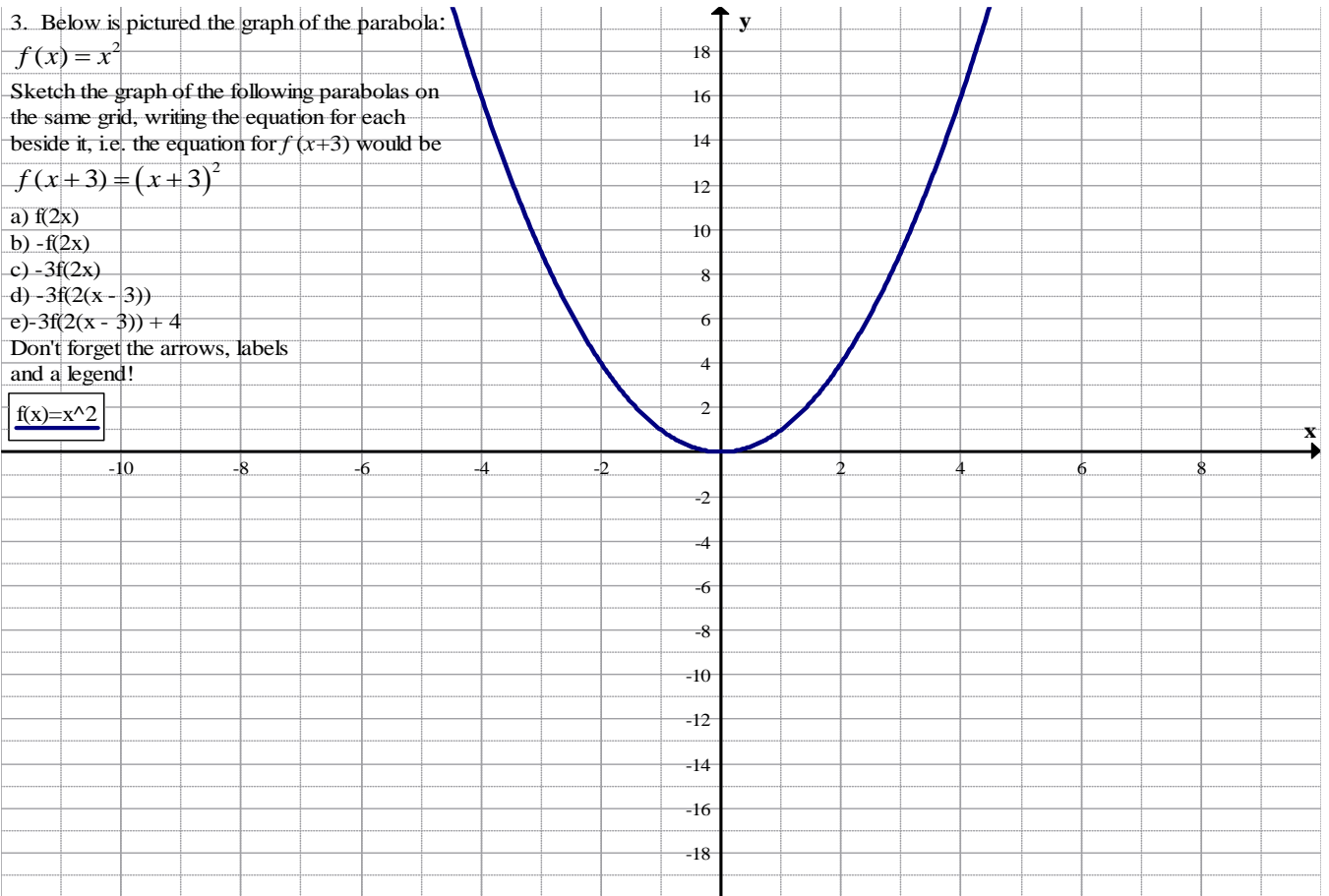
Sketch the graph of the following parabolas on the same grid, writing the equation for each beside it, i.e. the equation for $f(x+3)$ would be

$$f(x+3) = (x+3)^2$$

- a) $f(2x)$
- b) $-f(2x)$
- c) $-3f(2x)$
- d) $-3f(2(x-3))$
- e) $-3f(2(x-3))+4$

Don't forget the arrows, labels and a legend!

| |
|--------------|
| $f(x) = x^2$ |
|--------------|



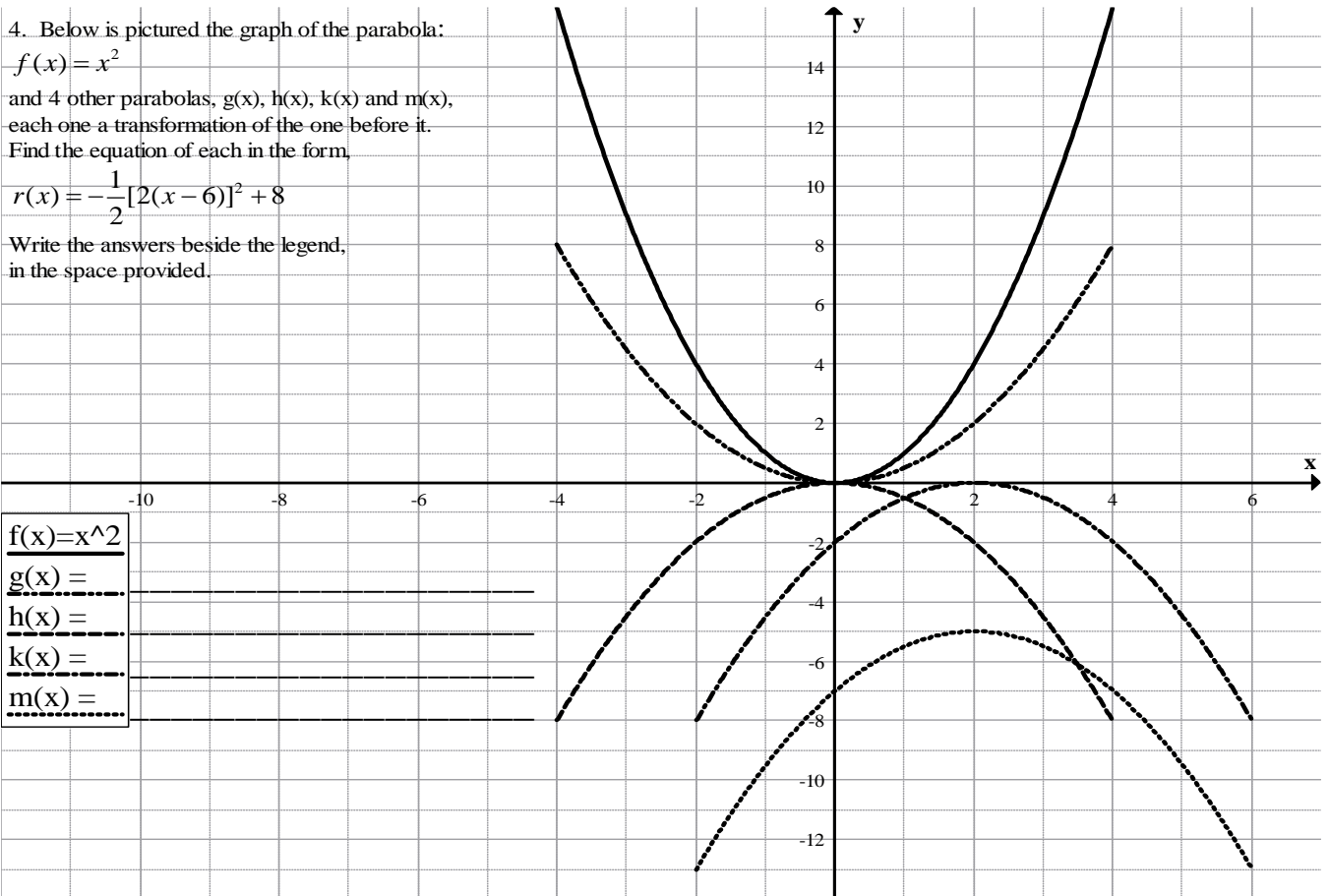
4. Below is pictured the graph of the parabola:

$$f(x) = x^2$$

and 4 other parabolas, $g(x)$, $h(x)$, $k(x)$ and $m(x)$, each one a transformation of the one before it. Find the equation of each in the form,

$$r(x) = -\frac{1}{2}[2(x-6)]^2 + 8$$

Write the answers beside the legend, in the space provided.



| |
|--------------|
| $f(x) = x^2$ |
|--------------|

| | |
|----------|-------|
| $g(x) =$ | _____ |
|----------|-------|

| | |
|----------|-------|
| $h(x) =$ | _____ |
|----------|-------|

| | |
|----------|-------|
| $k(x) =$ | _____ |
|----------|-------|

| | |
|----------|-------|
| $m(x) =$ | _____ |
|----------|-------|