9. [12 points] Lauren has just been approached by a talking kangaroo named Skipper. Lauren is alarmed by Skipper's ability to talk so she asks him if all kangaroos can talk. Skipper tells her that a kangaroo's probability of being able to talk depends on how much attention they receive from University of Sydney students. He also explains that this relationship has changed recently. Let $f(x)$ be the probability that a kangaroo born prior to 5 weeks ago is able to talk if x students have paid attention to that kangaroo in their life. Below is a graph of the function $f(x)$.
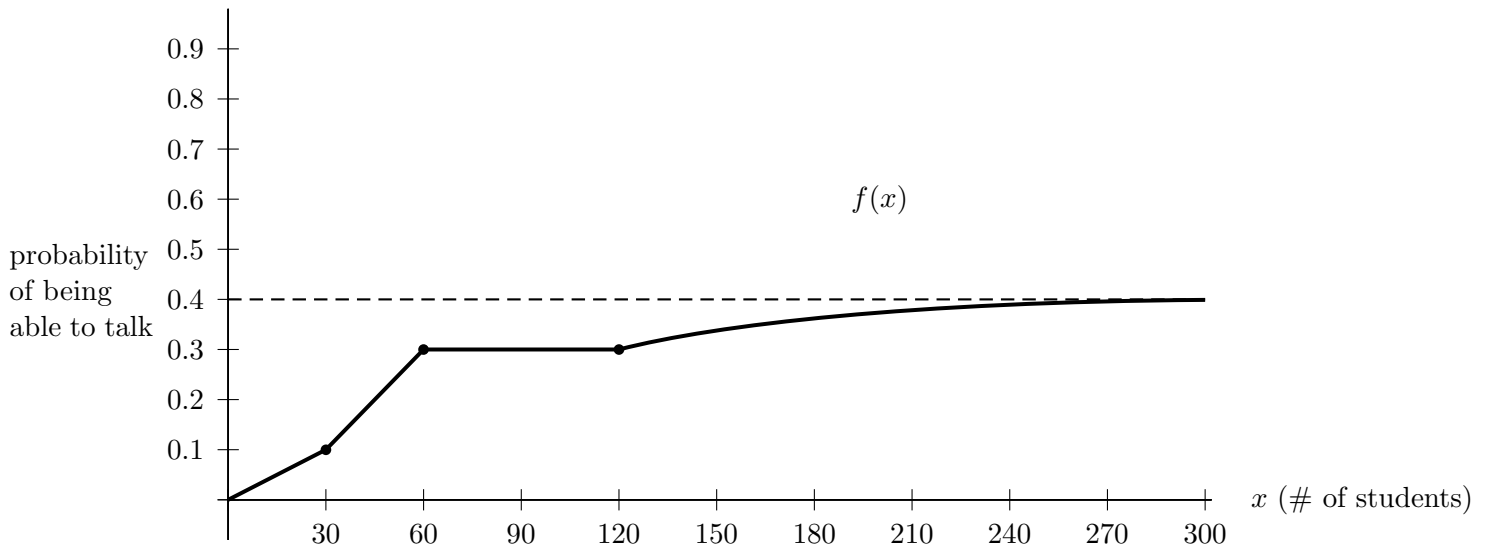
a. [4 points] Let $g(x)$ be the probability that a kangaroo born within the last 5 weeks is able to talk if x students have paid attention to that kangaroo in their life. A graph of $g(x)$ is given below.
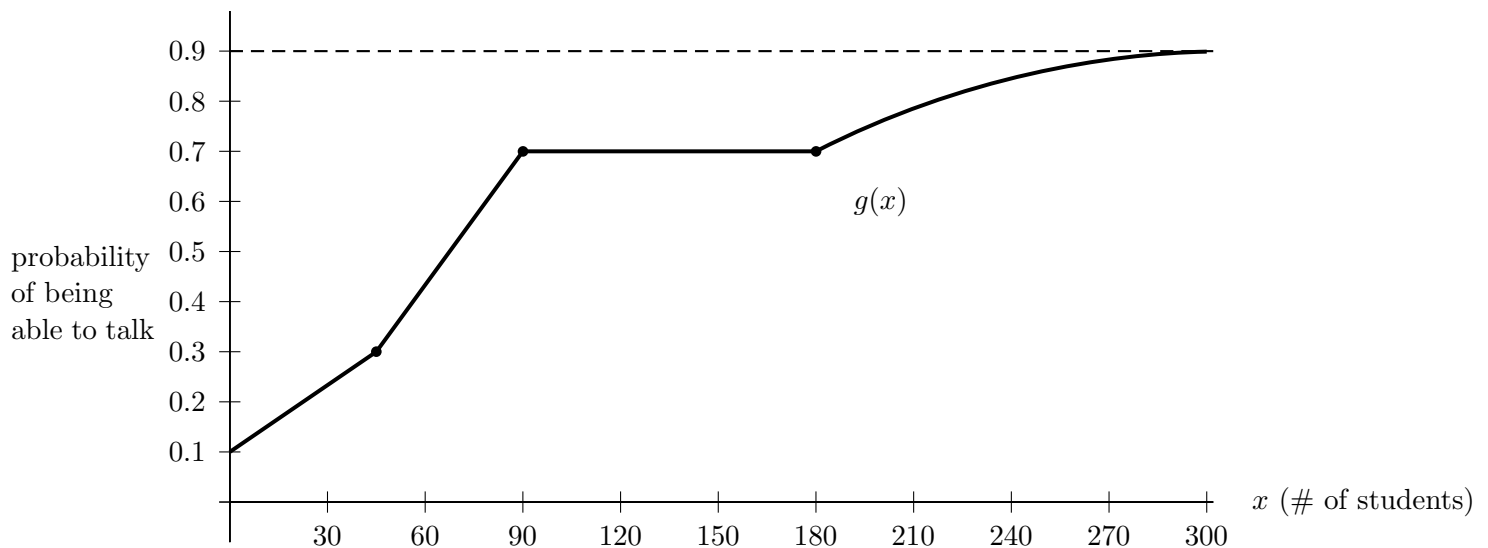
It turns out that for $x \geq 0$, $g(x)$ can be expressed as a transformation of $f(x)$. Write a formula for $g(x)$ as a transformation of $f(x)$.

Answer: _____

Problem continues on the next page.

This is a continuation of the problem from the previous page.

b. [3 points] Let $h(y)$ be the number of students that pay attention to a kangaroo over the duration of the kangaroo's life if the kangaroo has y docile units. (Note that we measure docileness in terms of docile units.) Give a practical interpretation of $g(h(5))$.

c. [3 points] The number of students who pay attention to a kangaroo with y docile units is proportional to y^2. Find a formula for $h(y)$ if a total of 160 students pay attention to a kangaroo with 4 docile units during its life.

Answer: $h(y) = $ _____

d. [2 points] Calculate $f(h(3))$.

Answer: $f(h(3)) = $ _____