11 For all real values of x, the functions f and g are defined by $f(x) = x^2 + 8ax + 4a^2$ and $g(x) = 6x - 2a$, where a is a positive constant.

(a) Find $fg(x)$.

Determine the range of $fg(x)$ in terms of a. **[4]**

(b) If $fg(2) = 144$, find the value of a. **[3]**

(c) Determine whether the function fg has an inverse. **[2]**