Inverse Functions with Completing the Square

Find the inverse function $f^{-1}(x)$ for each of the following functions:

(a) $f(x) = (x-2)^2 + 5$ for $x \geq 2$

(b) $f(x) = (x+3)^2 - 1$ for $x \leq -3$

(c) $f(x) = 2(x-1)^2 + 3$ for $x \leq 1$

(d) $f(x) = 4(x+2)^2 - 7$ for $x \geq -2$

Find the inverse function $f^{-1}(x)$ for each of the following functions:

(a) $f(x) = x^2 + 6x$ for $x \geq -3$

(b) $f(x) = x^2 - 10x + 3$ for $x \leq 5$

(c) $f(x) = x^2 + 2x - 5$ for $x \leq -1$

(d) $f(x) = x^2 - 8x + 1$ for $x \geq 4$

Find the inverse function $f^{-1}(x)$ for each of the following functions:

(a) $f(x) = 2x^2 - 8x$ for $x \geq 2$

(b) $f(x) = 3x^2 - 6x + 1$ for $x \leq 1$

(c) $f(x) = 4x^2 + 24x - 3$ for $x \geq -3$

(d) $f(x) = 2x^2 - 10x + 3$ for $x \leq 2.5$

The function $g(x)$ is defined as
$g(x) = x^2 - 6x + 3$ where $x \geq 3$

(a) Find the inverse function $g^{-1}(x)$ in the form $g^{-1}(x) = ..$

(b) Solve $g^{-1}(x) = 5$

The function $f(x)$ is defined as
$f(x) = 3x^2 + 12x - 2$ where $x \leq -2$

(a) Find the inverse function $f^{-1}(x)$ in the form $f^{-1}(x) = ..$

(b) Solve $f^{-1}(x) = -3$