1. The inverse function of $f(x) = 1 - \sqrt{4-3x}$, $0 \le x \le 4$ is $g(x) = px^2 + qx + r$, $a \le x \le b$. Find the value of $r + b$.

   Let $u = f^{-1}(x)$, $f(u) = x$

$$\begin{aligned} 1 - \sqrt{4-3u} &= x \\ -\sqrt{4-3u} &= x - 1 \\ 4 - 3u &= x^2 - 2x + 1 \\ -3u &= x^2 - 2x - 3 \\ u &= -\frac{1}{3}(x^2 - 2x - 3) \end{aligned}$$