6(a) $w(x) = \frac{1}{\sqrt{x}}$ $\qquad P(x) = \frac{w(x)}{\int_a^b w(x)dx}$.

$\Rightarrow \int_0^1 \frac{dx}{\sqrt{x}} = \left[2\sqrt{x}\right]_0^1 = 2$

$\therefore P(x) = \frac{2}{2\sqrt{x}}$ Proved.

Now $\int_0^{x(z)} p(x)\,dx = \int_0^z q(z)\,dz$

where $p(x)$ is the distribution we need.

$\Rightarrow$ Here $q(z) = 1$.

$\therefore \boxed{x(z) = z^2}$ Transformation formula.