6. Express (i) 2^{x+2} and (ii) $2^x + 2^x$ in the form $k2^x$, where $k \in N$.
(iii) Hence solve for c in the equation $2^x + 2^x = 2^{x+2}(c - 2)$.

(i)	$2^{x+2} = 2^x . 2^2$
$a^{n+m} = a^n . a^m$	$= 4(2^x)$
(ii)	$2^x + 2^x$
$a + a = 2a$	$= 2(2^x)$
(iii)	$2^x + 2^x = 2^{x+2}(c-2)$
	$2(2^x) = 4(2^x)(c-2)$
$\div 4(2^x)$	$\frac{1}{2} = c - 2$
$+2$	$c = \frac{1}{2} + 2 = 5/2$
	$c = 5/2$

10. If $y = 2^x$, write (i) 2^{2x} (ii) 2^{2x+1} and (iii) 2^{x+3} in terms of y.
(iv) Hence solve the equation $2^{2x+1} - 2^{x+3} - 2^x + 4 = 0$.

$y = 2^x$ (i)	$2^{2x} = (2^x)^2 = y^2$
$a^{n+m} = a^{nm}$ (ii)	$2^{2x+1} = (2^{2x})(2) = 2y^2$
(iii)	$2^{x+3} = (2^x)(2^3) = 8y$
(iv)	$2^{2x+1} - 2^{x+3} - 2^x + 4 = 0$
Sub in y	$2y^2 - 8y - y + 4 = 0$
Simplify	$2y^2 - 9y + 4 = 0$
	$(2y-1)(y-4) = 0$
	$2y - 1 = 0$, $y = 1/2$ | $y = 4$
$x = ?$ $y = 2^x$	$\frac{1}{2} = 2^x \Rightarrow x = -1$
	$4 = 2^x \Rightarrow x = 2$

11. By using the substitution $y = 3^x$, find the two values of x such that $3.3^x + 3^{-x} = 4$ and verify each solution by substitution into the original exponential equation.

let $y = 3^x$

$3(3^x) + 3^{-x} = 4$

$3y + \frac{1}{y} = 4$

$\times y$

$3y^2 + 1 = 4y$

$3y^2 - 4y + 1 = 0$

$(3y - 1)(y - 1) = 0$

$3y - 1 = 0 \quad | \quad y = 1$

$y = 1/3$

$y = 3^x, \; x = ?$

$\frac{1}{3} = 3^x \Rightarrow x = -1$

$1 = 3^x \Rightarrow x = 0$