a) $2^{2x} + 2^x - 12 = 0$ $(2^x)^2$

$$(2^x)^2 + 2^x - 12 = 0$$

$$(2^x - 3)(2^x + 4) = 0$$

$2^x = a$

$a^2 + a - 12 = 0$

$(a+4)(a-3) = 0$