Books and notes are **not** allowed. *Show all your work and clearly indicate your answers.* Good Luck!

1. (8 pts) Solve the following equations using the quadratic formula. <u>Simplify</u> your answers and leave them in exact form (i.e. no decimals). If no solution exists, clearly state so.

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

(b). $2x^2 + x + 1 = 0$

2. (4 pts) Solve the following equation by factoring.

$x^2 + x = \dfrac{1}{2}x^2 + 4$

3. (2 pts) If you want to shift the parabola $y = x^2$ to the <u>left by 3 units</u> and <u>down by 2 units</u>, what would the equation look like?

$y =$

4. (6 pts) Given the function $y = 2x^2 - 8x$,

(a). Find the (x, y) coordinate of the vertex.

(b). Find the x- and y-intercepts.

(c). Graph the function and clearly label the vertex.