Quadratic Functions

A. Transform each function $y = ax^2 + bx + c$ into the form $y = a(x - p)^2 + q$

1. $y = 2x^2 + 5x - 7$
2. $y = 5x^2 + x - 3$
3. $y = -7x^2 + 4x - 1$
4. $y = -3x^2 - 7x + 1$
5. $y = x^2 + x - 3$
6. $y = -x^2 + 2x - 5$

B. For each of the given equations find the following information:

a) Determine the direction of opening
b) Describe the shape as narrower, normal, or wider
c) Does it have a maximum or minimum point?
d) What is the maximum or minimum value?
e) What is the equation of the axis of symmetry?
f) What are the coordinates of the vertex?
g) What is the range of the function?
h) What is the domain of the function?
i) Construct a table of values
j) Sketch the graph

1. $y = 2(x+3)^2 - 1$
2. $y = -3(x+2)^2 - 7$
3. $y = -4(x-1)^2 - 2$
4. $y = -2(x+3)^2 + 1$
5. $y = \frac{1}{3}(x+1)^2 + 2$
6. $y = \frac{-1}{4}(x-3)^2 - 5$