Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parabola worksheet with vertex **not** at (0,0).

Must show work to receive full credit.

Find the vertex, focus, axis of symmetry, and directrix of the parabolas below.

1) $\left(x+1\right)^{2}=-3\left(y-6\right)$ (2) $\left(x-3\right)^{2}=y-7$

3) $y^{2}=-10\left(x-3\right)$ (4) $\left(x+6\right)^{2}=4\left(y+8\right)$

5) Graph problem #1

6) Graph problem #2

7) Graph problem #3

8) Graph problem #4

Extra Credit: Find the equation of the parabola given the vertex and either the focus or directrix.

a) vertex: (2,-1), focus (2,-4)

b) vertex: (-3,6), directrix: x = 2