

Complete as many of the following problems as you can with your group.

If **your entire table** finishes early, and you have presented your given problem, you may leave early.

- (1) Find the vertex using two methods, give the axis of symmetry, and indicate which way the parabola opens..

(a) $y = 2x^2 + 8x + 3$

(b) $y = x^2 - 4x$

- (2) Find the vertex using two methods, give the axis of symmetry, and indicate which way the parabola opens..

(a) $y = 1 - x^2$

(b) $y = x^2 - 2x - 3$

- (3) Find the vertex using two methods, give the axis of symmetry, and indicate which way the parabola opens..

(a) $y = -x^2 + 6x + 2$

(b) $y = 2x^2 - 2x$

Key:

(1) (a) $(-2, -5)$, $x = -2$, up

(b) $(2, -4)$, $x = 2$, up

(2) (a) $(0, 1)$, $x = 0$, down

(b) $(1, -4)$, $x = 1$, up

(3) (a) $(3, 11)$, $x = 3$, down

(b) $(\frac{1}{2}, -\frac{1}{2})$, $x = \frac{1}{2}$, up