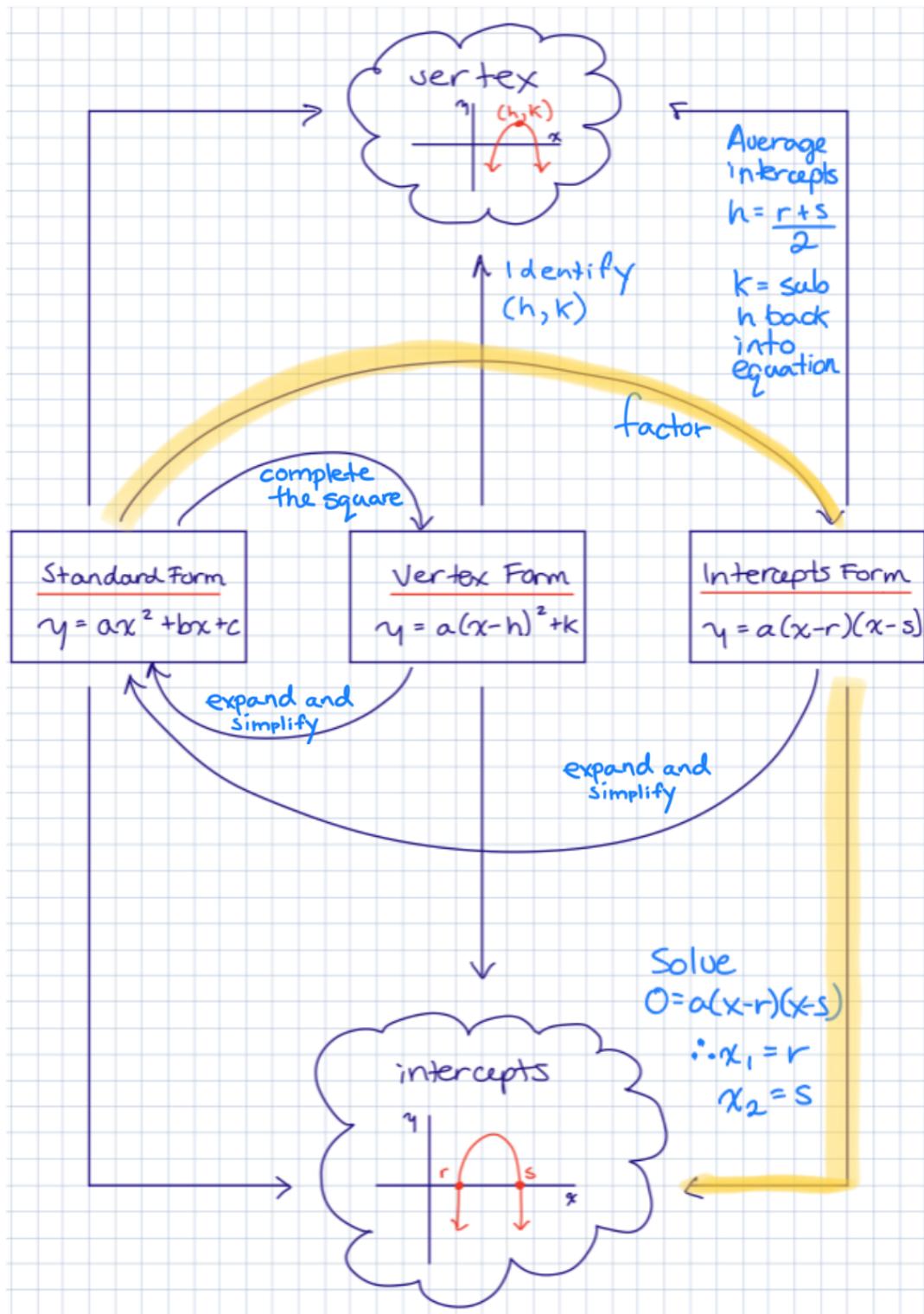


Graphing Quadratics Using the Intercepts and Vertex

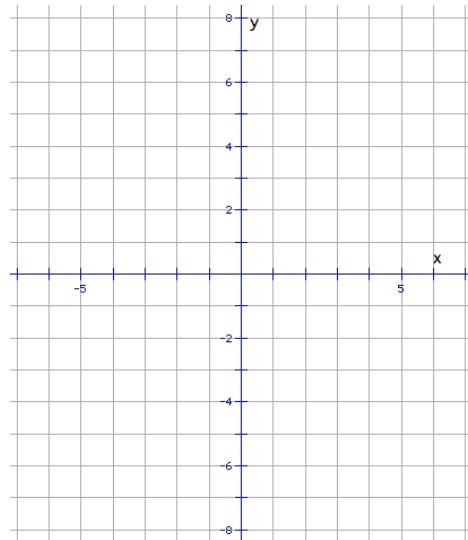
Quadratic Relations Concept Map



Recall

Earlier this semester we learned how to graph quadratic relations given in the form $y = a(x - r)(x - s)$. The r and s values represent the x -intercepts – where the parabola crosses the x -axis.

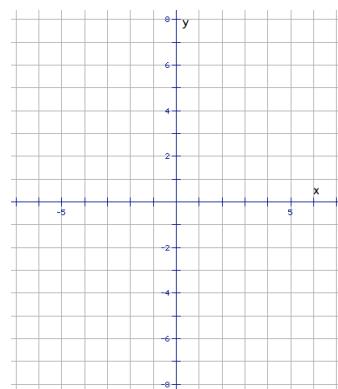
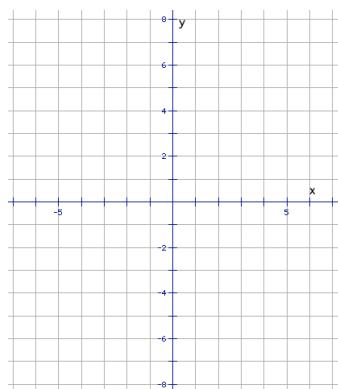
Try graphing the following relation: $y = (x - 3)(x + 1)$

**Example 1**

Graph each relation by factoring (do not complete the square).

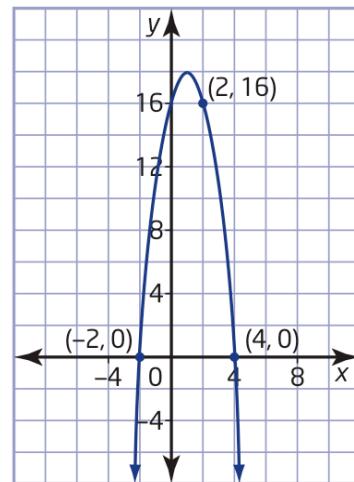
a) $y = x^2 + 8x + 7$

b) $y = -x^2 + 6x - 9$



Example 2

Find the equation of the relation from the information given in the graph.

**Example 3**

To commemorate the 100th anniversary of the Newtonville Fair, an entrance arch will be built. The design engineer uses the equation $h = -d^2 + 16$ to model the arch, where h is the height, in metres, above the ground and d is the horizontal distance, in metres, from the centre of the arch.

- How wide and how tall is the arch?
- For what values of d is the relation valid? Explain.
- If a width of 2.5 m is needed per line-up at the entrance, how many line-ups can there be?

Opportunity to Learn

Complete all questions in the handout that accompanies this lesson.