

Name: _____ Date: _____ Class: _____

A Frictional Roller Coaster Pre-Quiz

An open-downward parabola with vertex $(9, 3)$ will be set up so it is tangent to the open-upward parabola with vertex $(4, 1)$ and passing through $(0, 9)$. Find the equation of the open-downward parabola and the tangency point.

Hint: Use the parabola vertex form equation: $y - k = a(x - h)^2$, and the fact that at the tangency point the slopes of the tangent lines of both parabolas are equal.