**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.