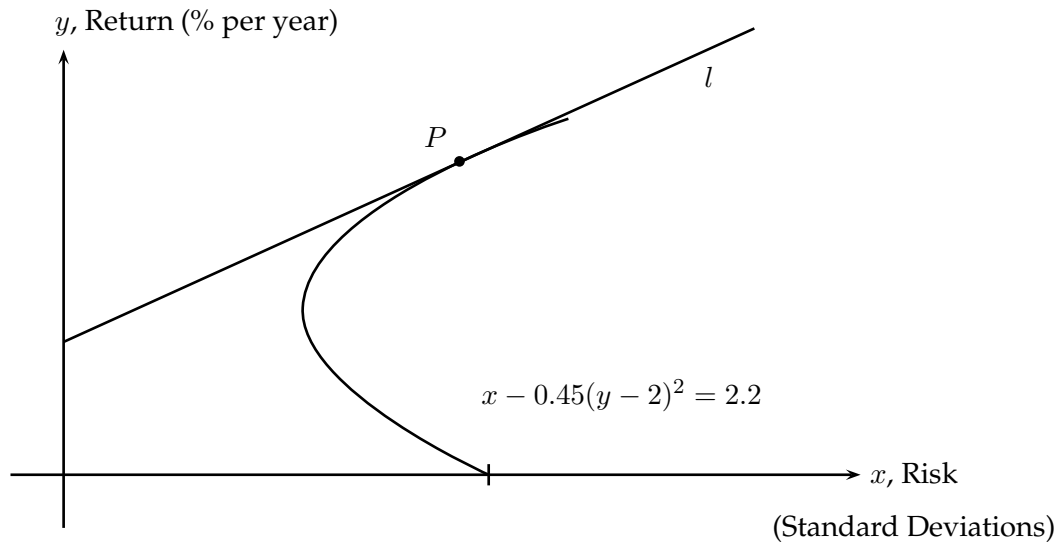6. In Modern Portfolio Theory, a client's portfolio is structured in a way that balances risk and return. For a certain type of portfolio, the risk, x, and return, y, are related by the equation $x - 0.45(y - 2)^2 = 2.2$. This curve is shown in the graph below. The point P represents a particular portfolio of this type with a risk of 3.8 units. The tangent line, l, through point P is also shown.

(a) (5 points) Using implicit differentiation, find dy/dx, and the coordinates of the point(s) where the slope is undefined.

(b) (8 points) The y-intercept of the tangent line for a given portfolio is called the *Risk Free Rate of Return*. Use your answer from (a) to find the Risk Free Rate of Return for this portfolio.

(c) (3 points) Now, estimate the return of an optimal portfolio having a risk of 4 units by using your information from part (b). Would this be an overestimate or an underestimate? Why?