Name:
Result:

1. Find a quadratic equation which satisfies the following conditions   [6 *points*]

a) Vertex at $(1, 3)$, y-intercept at $y = 2$.

b) One of the x-intercepts at $(2, 0)$, axis of symmetry at $x = -1$, graph passes through $(4, 4)$.

c) Graph passes through $(2, 2.5), (4, 10)$ and $(8, 37)$.

2. Let the solutions to the equation: [5 *points*]

$$2x^2 - 5x + 1 = 0$$

be α and β. Without solving the equation, find quadratic equations whose solutions are:

a) α^3 and β^3

b) $\alpha\beta$ and $\alpha^2\beta^2$.

3. A piece of wire of length equal to 2 m is cut into two pieces. One is made into a square, the other into a circle. How should the wire be cut, so that the total area of the square and circle is minimal. [4 *points*]

4. Consider the equation: $\hspace{6cm}$ [5 *points*]

$$x^2 + (m+2)x + 3m - 2 = 0$$

Find the values of parameter m for which the equation has two real, **negative** solutions.