206.2.1-01

B – Graphical Solution

Look at the graph in the excel file "206.2.1-01.xls".The red and the blue lines are the different equations for the length of the rope. Where they cross (at x = 16) is the answer. I believe that is the answer they seek – as long as you draw it accurately.

206.2.1-04

B – The Field

Let x be the width of the field. Hence, length = $x + 2$. If the area of the field is 120 yd^2, then the equation is $x(x+2) = 120$. This turns into the quadratic equation: $x^2 + 2x - 120 = 0$.

Solve this using the quadratic equation as follows:

$$x = \frac{-2 \pm \sqrt{2^2 - (4 \times 1 \times (-120))}}{2 \times 1}$$

$$x = \frac{-2 \pm \sqrt{4 - (-480)}}{2}$$

$$x = \frac{-2 \pm \sqrt{484}}{2}$$

$$x = \frac{-2 \pm 22}{2}$$

$$x = 10, -12$$

Thus, the width of the field must be 10 yards. A width of -12 yards is unreasonable because the resulting length would be 10 yards. (-12 + 2 = -10). This would therefore make the width greater than the length!