43 (a) **Graphical:** First, we must determine a formula for the area. Let x represent the height of the computer screen. Then, $x + 2.5$ is the width. The area of the screen is height times width, computed by $A(x) = x(x + 2.5)$. We must solve the quadratic equation $x(x + 2.5) = 93.5$ or $x^2 + 2.5x - 93.5 = 0$. Graph $\text{Y}_1 = \text{X\^{}2} + 2.5\text{X} - 93.5$ and determine any zeros. *Figure 43a* shows that the equation has two zeros, one negative and one positive. The positive zero is located at $x = 8.5$. Therefore, the height is 8.5 inches and the width is $8.5 + 2.5 = 11$ inches.

[−15, 15, 1] by [−100, 100, 10]

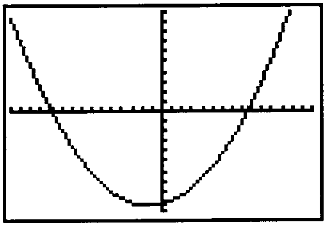

Figure 43a

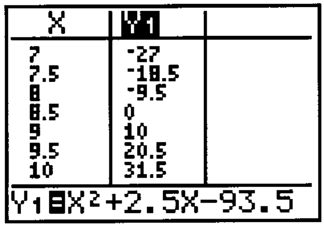

Figure 43b

(b) **Numerical:** Table $\text{Y}_1 = \text{X\^{}2} + 2.5\text{X} - 93.5$ starting at $x = 7$, incrementing by 0.5. One can see that there is a positive root of the equation $x^2 + 2.5x - 93.5 = 0$ when $x = 8.5$. See *Figure 43b*. This is the height, while the width is 2.5 inches more or 11 inches. The dimensions are 8.5 inches by 11 inches.

(c) **Symbolic:** The quadratic equation $x^2 + 2.5x - 93.5 = 0$ can be solved by the quadratic formula.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-2.5 \pm \sqrt{2.5^2 - 4(1)(-93.5)}}{2(1)} = \frac{-2.5 \pm 19.5}{2} = 8.5,\ -11$$

The positive answer gives a height of 8.5 inches. It follows that the width is 11 inches.