$$f(x) = -x^2 + 5x + 3$$

$$f(x) = -\left(x^2 - 5x\right) + 3$$

$$f(x) = -\left(x^2 - 5x + 0\right) + 3$$

$$f(x) = -\left(x^2 - 5x + \left(\frac{5}{2}\right)^2 - \left(\frac{5}{2}\right)^2\right) + 3$$

$$f(x) = -\left(x^2 - 5x + \left(\frac{5}{2}\right)^2\right) - -\left(\frac{5}{2}\right)^2 + 3$$

Students often make this step.

$$f(x) = -\left(x - \frac{5}{2}\right)^2 + \left(\frac{5}{2}\right)^2 + 3$$

$$f(x) = -\left(x - \frac{5}{2}\right)^2 + \frac{25}{4} + 3$$

$$f(x) = -\left(x - \frac{5}{2}\right)^2 + \frac{25}{4} + \frac{3}{1}$$

$$f(x) = -\left(x - \frac{5}{2}\right)^2 + \frac{25}{4} + \frac{12}{4}$$

$$f(x) = -\left(x - \frac{5}{2}\right)^2 + \frac{37}{4}$$

$$f(x) = -\left(x - \frac{5}{2}\right)^2 + 9.25$$