Find the **vertex** of the **quadratic equation** using ***various methods***.

$f(x) = 2x^2 - 4x + 6$ ∪ $ax^2 + bx + c = 0$

$2 \quad -4 \quad 6$

$f'(x) = 2(2)x^1 - 4(1) + 0$

$f'(x) = 4x - 4$

$0 = 4x - 4$

$+4 \qquad +4$

$\frac{4}{4} = \frac{4x}{4}$

$1 = x$

$\left(\frac{-b}{2a}, f\left(\frac{-b}{2a}\right)\right)$

$x = -\left(\frac{-4}{2(2)}\right) = -\left(\frac{-4}{4}\right)$

$= -(-1)$

$= 1$

$f(1) = 4$

$(1, 4)$

$f(1) = 2(1)^2 - 4(1) + 6$

$= 2 - 4 + 6$ $(1, 4)$

$= 8 - 4 = 4$