$$f(x) = 2x^2 - 3x + 4$$

$f(3) = 2(3)^2 - 3(3) + 4$
$= 18 - 9 + 4$
$f(3) = 13$

$f(-4) = 2(-4)^2 - 3(-4) + 4$
$= 32 + 12 + 4$
$f(-4) = 48$

$f(a) = 2a^2 - 3a + 4$

$f(3a) = 2(3a)^2 - 3(3a) + 4$
$= 2(9a^2) - 3(3a) + 4$
$f(3a) = 18a^2 - 9a + 4$

$3f(a) = 3(2a^2 - 3a + 4)$
$= 6a^2 - 9a + 12$

$f(x) = 2x^2 - 3x + 4$

$f(x+2) = 2\boxed{(x+2)^2} - 3(x+2) + 4$
$(x+2)(x+2)$
$= 2(x^2 + 4x + 4) - 3(x+2) + 4$
$= 2x^2 + 8x + 8 - 3x - 6 + 4$
$f(x+2) = 2x^2 + 5x + 6$

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