$f(n) = 1n^2$
$g(n) = 3n+5$

Supondo que $c = 1$

$n = 1, f(1) = 1, g(1) = 8$
$n = 2, f(2) = 4, g(2) = 11$
$n = 3, f(3) = 9, g(3) = 14$
$n = 4, f(4) = 16, g(4) = 17$
$n = 5, f(5) = 25, g(5) = 20$
$n = 6, f(6) = 36, g(6) = 23$

$m = 5$

Notação O
$g(n) \leq cf(n)$

$g(n) = O(f(n))$

$(n+1)^2 = O(n^2)$

$(n+1)^2 \leq cn^2$

$n^2 + 2n + 1 \leq cn^2$
$n^2/n^2 + 2n/n^2 + 1/n^2 \leq c$
$1 + 2/n + 1/n^2 \leq c$

Supondo $n = 1$, $c = 4$
$1 + 2/1 + 1/1^2 \leq c$
$4 \leq c$

$1 + 2/n + 1/n^2 \leq 4$

$1 + 0 + 0 \leq 4$
VERDADEIRO

$2/4 = 0,5$
$2/5 = 0,4$
$2/6 = 0,33$
$2/1000000 = 0,000002$

Notação Ω (Ômega)
$g(n) \geq cf(n)$

$3n^3 + 2n^2 + n = \Omega(n^3)$

$3n^3 + 2n^2 + n \geq cn^3$

$3n^3/n^3 + 2n^2/n^3 + n/n^3 \geq c$
$3 + 2/n + 1/n^2 \geq c$
Supondo $n = 1$, $c = 6$

$3 + 2/n + 1/n^2 \geq 6$
$3 + 0 + 0 \geq 6$
FALSO

$3n^3 + 2n^2 + n = \Omega(n)$
$3n^3 + 2n^2 + n \geq cn$
$3n^3/n + 2n^2/n + n/n \geq c$
$3n^2 + 2n + 1 \geq c$
Supondo $n = 1$, $c = 6$

$3n^2 + 2n + 1 \geq 6$
infinito + infinito + $1 \geq 6$
VERDADEIRO
$n = 2$, $12 + 4 + 1 = 17 \geq 6$