1. i) 2 variables assigned

ii) loop that loops n times

iii) variable being assigned n times, (result + s) n times

iv) return

This results in 2n + nx + 3, where x denotes the order of (result+s). This means this function is of complexity order T(n).

|  |  |
| --- | --- |
| Order | Speed /s (4 s.f.) |
| T(1) | 3.640\*10^-7 |
| T(100) | 2.309\*10^-5 |
| T(1,000) | 0.001465 |
| T(10,000) | 0.1011 |

Ignoring T(1) to T(100), the increase to the next order class is 10 but the speed increases by 100 (10^2). A good guess for the order of this function is of ϴ(n^2)

c)

|  |  |
| --- | --- |
| Order | Speed /s (4 s.f.) |
| T(1) | 3.272\*10^-7 |
| T(100) | 4.441\*10^-6 |
| T(1,000) | 4.501\*10^-5 |
| T(10,000) | 3.309\*10^-4 |

Again ignoring T(1) to T(100), as the 10th power increases by 1 in each it’s a good assumption that this function is of ϴ(n)