# Exercises - Temporal Complexity

TC 1031 - Datos structures y fundamentales algorithms Tecnológico de Monterrey, campus Santa Fe Instructor: Dr. Leonardo Chang

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Jose Granger Salgado - A01023661

## Exercise 1

Which of the following functions are $O(n^2)$? No explanation is required, but you might want to prove your answer to yourself to convince yourself that you are correct.

a) $f_1(n) = {}^{1}{}_{20}n^3 + 4n^2$

b) $f_2(n)=2n^2 + 13n$

c) $f_3(n)=7n + 30 \log n$

d) $f_4(n) = \sin(n) + 15$

e) $f_5(n) = n\log(n)$

f) $f_6(n)=2^{2^{10}}$

g) $f_7(n)=2^n$

## Exercise 2

Which of the following functions are $\Omega(n^2)$? No explanation is required, but you might want to prove your answer to yourself to convince yourself that you are correct.

a) $f_1(n) = {}^{1/50}n^3 + n^2$

b) $f_2(n)=8n^2 + 6n$

c) $f_3(n)=7n + 2 \log n$

d) $f_4(n) = n^2(\sin(n) + 3)$

e) $f_5(n) = n^2 \log(n)$

f) $f_6(n) = n!$

g) $f_7(n) = n^2(1/\log n)$