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$f(n)$ and $g(n)$

I. a) $367n + 1098$ and $2n$

$n_0 = 40$

$k = 200$

b) $n^2 + 2n + 6$ and $6n^2 - 25$

$n_0 = 7$, $k = 1$

$7^2 + 2(7) + 6 \leq 1 \cdot (6(7)^2 - 25)$

$49 + 14 + 6 \leq 6 \cdot 49 - 25$

$69 \leq 269$

c) $n^3 + n^2 - 2n$ and $6n^2 - 25$

Due to the cubic term, $f(n)$ will grow faster.

d) $869,438$ and 923

$n_0 =$ anything

$k = 942$

e) 2^n and 3^n

$G(n)$ will grow faster

f) 3^n and 2^n

$F(n)$ will grow at greater than a constant-multiple rate

g) $\log_2(n)$ and $\log_{10}(n)$

$n_0 = 1$

$k = 10$

h) $\log_{10}(n^2)$ and $\log_2(n)$

$n_0 = 1$

$k = 10$

II. a) 1 and 1

b) 1 and 7

c) 1 (the end) and 1 (the front)
(or the front
if you assume changing the ptr is free)

d) $n-5$ unless order doesn't matter and 6

e) on average, $\frac{n}{2}$ for both

f) n for both