cs5800 homework1

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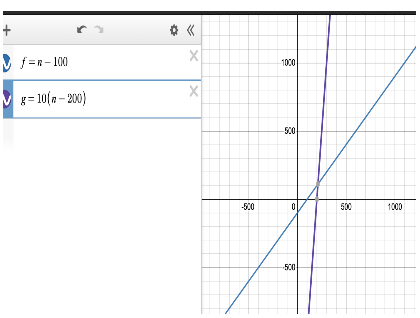
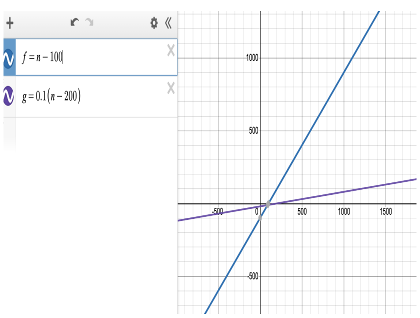
1 In each of the following situations, indicate whether f = O(g), or f = ω(g), or both (in which case f = θ(g)).

(a) There is C and C' make $C * g(n) \leq f(n) \leq C' * g(n)$, so there's f = O(g), f = Omega (g) and f = Theta(g)



(a) Big O

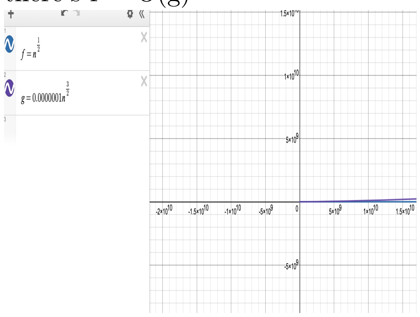


(b) Big Omega

Figure 1: Image for a)

(d) There is C and C' make $C * g(n) \leq f(n) \leq C' * g(n)$, so there's f = O(g), f = Omega (g) and f = Theta(g)

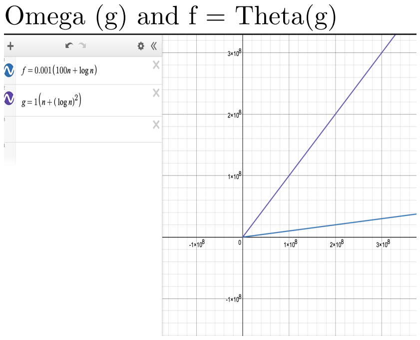
(b) No matter how small C is C*g(n) can always bigger than f(n) when n≥n0, so there's f = O(g)



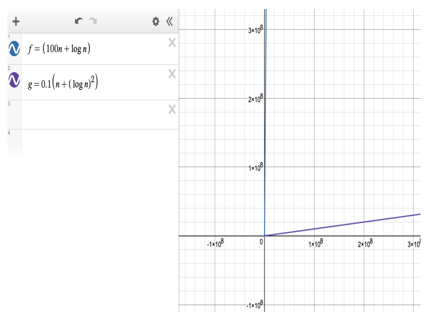
(a) Big O

Figure 2: Image for b)

(c) There is C and C' make $C * g(n) \leq f(n) \leq C' * g(n)$, so there's f = O(g), f = Omega (g) and f = Theta(g)

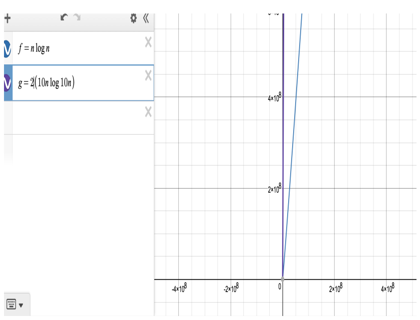


(a) Big O

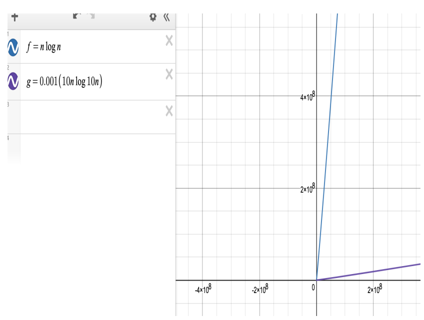


(b) Big Omega

Figure 3: Image for c)



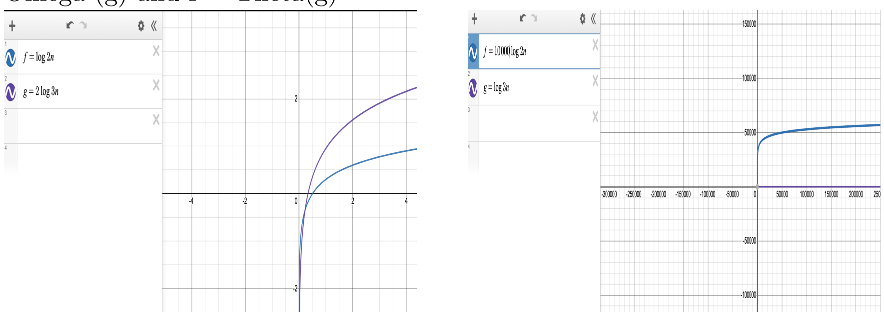
(a) Big O



(b) Big Omega

Figure 4: Image for d)

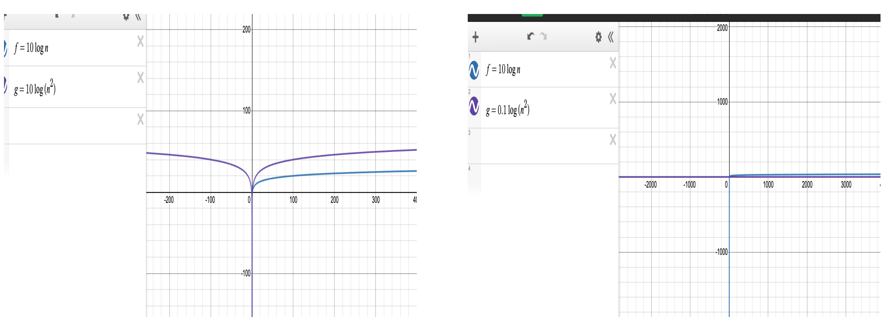
(e) There is C and C' make $C * g(n) \leq f(n) \leq C' * g(n)$, so there's f = O(g), f = Omega (g) and f = Theta(g)



(a) Big O (b) Big Omega

Figure 5: Image for e)

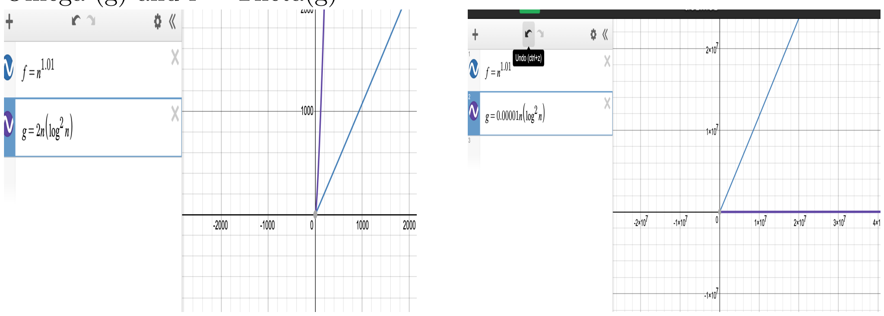
(f) There is C and C' make $C * g(n) \leq f(n) \leq C' * g(n)$, so there's f = O(g), f = Omega (g) and f = Theta(g)



(a) Big O (b) Big Omega

Figure 6: Image for f)

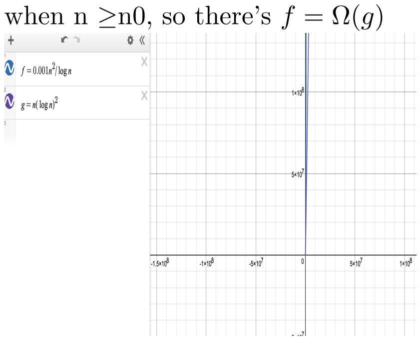
(g) There is C and C' make $C * g(n) \leq f(n) \leq C' * g(n)$, so there's f = O(g), f = Omega (g) and f = Theta(g)



(a) Big O (b) Big Omega

Figure 7: Image for g)

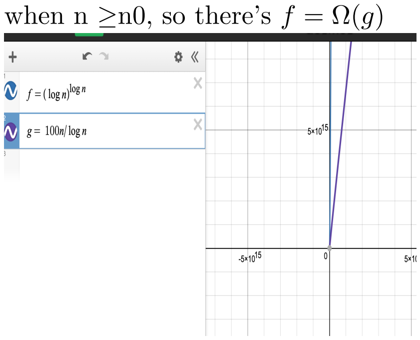
(h) No matter how big C is, C*g(n) can always smaller than f(n) at some point when n $\geq$n0, so there's $f = \Omega(g)$



(a) Big omega

Figure 8: Image for h)

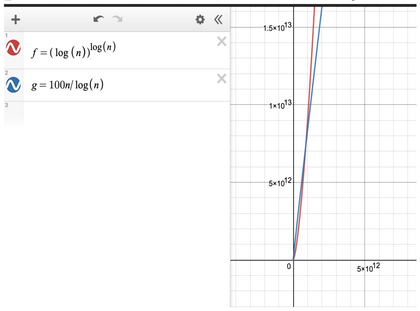
(i) No matter how big C is, C*g(n) can always smaller than f(n) at some point when n $\geq$n0, so there's $f = \Omega(g)$



(a) Big Omega

Figure 9: Image for i)

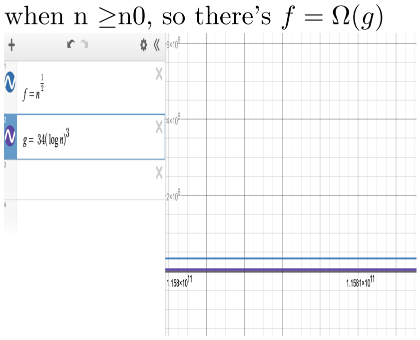
(j) this is j No matter how big C is, C*g(n) can always smaller than f(n) at some point when n $\geq$n0, so there's $f = \Omega(g)$



(a) Big Omega

Figure 10: Image for i)

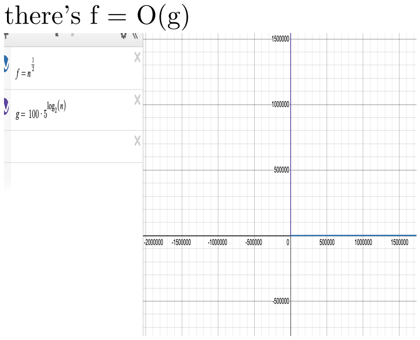
(k) No matter how big C is, C*g(n) can always smaller than f(n) at some point when n $\geq$n0, so there's $f = \Omega(g)$



(a) Big Omega

Figure 11: Image for k)

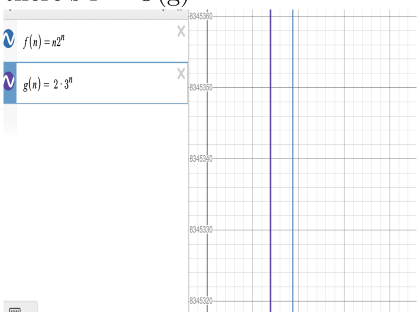
(l) No matter how small C is C*g(n) can always bigger than f(n) when n$\geq$n0, so there's f = O(g)



(a) Big O

Figure 12: Image for l)

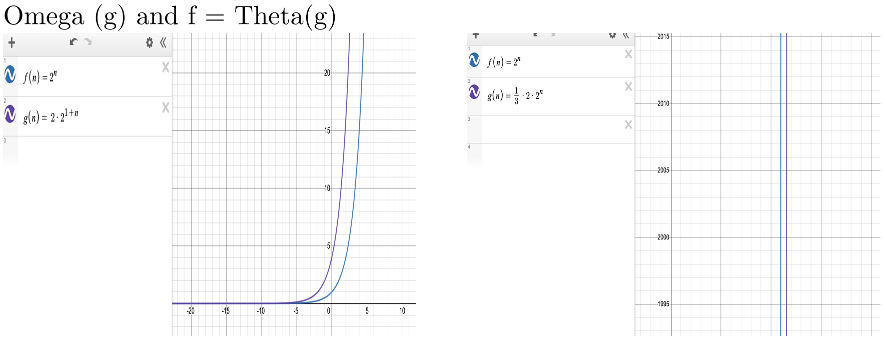
(m) No matter how small C is C*g(n) can always bigger than f(n) when n≥n0, so there's f = O(g)



(a) Big O

Figure 13: Image for m)

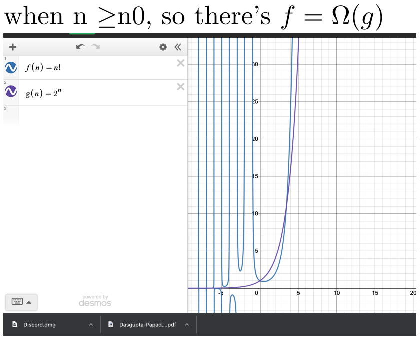
(n) There is C and C' make $C * g(n) \leq f(n) \leq C' * g(n)$, so there's f = O(g), f = Omega (g) and f = Theta(g)



(a) Big O (b) Big Omega

Figure 14: image for n

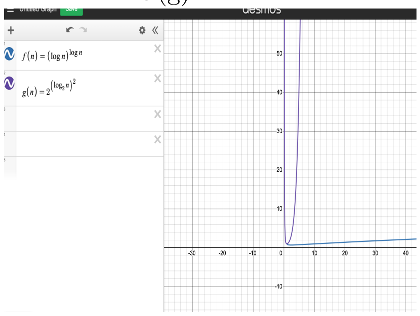
(o) No matter how big C is, C*g(n) can always smaller than f(n) at some point when n ≥n0, so there's $f = \Omega(g)$



(a) Big Omega

Figure 15: Image for i)

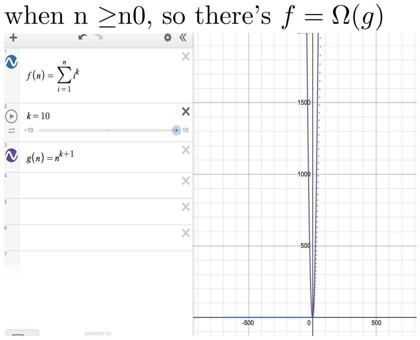
(p) No matter how small C is C*g(n) can always bigger than f(n) when n≥n0, so there's f = O(g)



(a) Big O

Figure 16: Image for i)

(q) No matter how big C is, C*g(n) can always smaller than f(n) at some point when n ≥n0, so there's $f = \Omega(g)$



(a) Big Omega

Figure 17: Image for i)