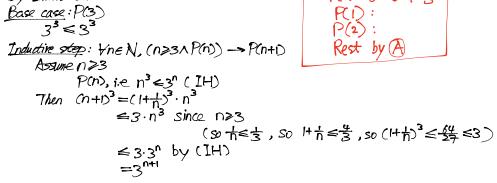
```
Lecture 4
                              3^{n+1} = 3 \cdot 3^n \quad (n+1)^3 = (1+\frac{1}{n})^3 \cdot n^3
        243 125
                                If n \ge 3 and n^3 \le 3^n
                                then (n+1)^3 = (1+\frac{1}{11})^3 \cdot n^3 \le 3 \cdot n^3 by (*) and n > 3 \le 3 \cdot 3^n by (*) = 3^{n+1}
    n / P(n)
     0
   123456
                                                                                                For n∈N, let P(n) be n3 ≤ 3<sup>n</sup>
                                 ⇒ VneN, [(n ≥3 AP(n)) → P(n+1)]
(3≥3 AP(3)) → P(4)
                                                   (4≥3 ∧ P(4)) → P(5)
                                   (0≥3 AP(0)) → P(1) ····· This is True (False → True) is True
    [P(3) \land \forall n \in \mathbb{N}, (n \ge 3) \land P(n)) \longrightarrow P(n+1)] \longrightarrow \forall n \in \mathbb{N}, (n \ge 3 \longrightarrow P(n))
                             An inductive principle we believe / accept
AProof of theN, n>3->P(n)
                                                                        BTW, YneN, P(n)
    By Induction
                                                                           P(0): 03=0=1=2°
   Base case: P(3)
                                                                             RID:
           3<sup>3</sup> ≤ 3<sup>3</sup>
                                                                            P(2):
```



What amounts of money are you make from \$3 & \$5 bills?

0.3,5,6,8,9,10,11,12,13,14,15,16,...

fyrthou 233 is possible,

then so is 236.

For neN, let P(n) be: n can be made from 3s AND 5s YneN, (P(n)-P(n+3)) $[P(8) \land P(9) \land P(10) \land \forall n \in \mathbb{N}, ([n \ge 8; P(n)] \longrightarrow P(n+3))] \longrightarrow \underbrace{\forall n \in \mathbb{N}, (n \ge 8 \longrightarrow P(n))}_{\text{(f)}}$