

## Test 2 Review Questions

① 2.2 75

② 2.2 9 a f

③ 2.3 1 c n

6a

10a

④ Prove by induction:

a)  $1 \cdot 2 + 2 \cdot 3 + 3 \cdot 4 + \dots + n(n+1) = \frac{n(n+1)(n+2)}{3}$

b)  $\frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \frac{1}{3 \cdot 4} + \dots + \frac{1}{n(n+1)} = \frac{n}{n+1}$

c)  $n^3 - n$  is divisible by 3.d)  $n^3 - n$  is divisible by 6.

e)  $1! + 2! + 3! + \dots + n! < (n+1)!$

f)  $n^n > n!$