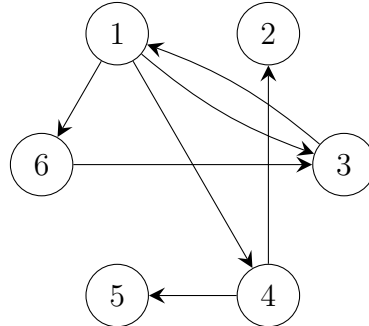**1.** List the vertices of the following graph in depth-first order:

Start with node 1 and traverse lower-numbered nodes first.

2. Order the following functions by asymptotic complexity:

$$n + n^2 \qquad n \qquad \log(n^2) \qquad \log n \qquad n! \qquad e^{2n} \qquad n \log n \qquad e^n \qquad n^2$$

If two functions are asymptotically equivalent, indicate this. For example,

$$1 \quad \ll \quad n + 1 \quad \approx \quad n \quad \ll \quad n^n$$

3. Give the asymptotic complexity of the following algorithm for matrix multiplication:

function MULTIPLY(A, B)
  for $1 \leq i \leq n$ **do**
    for $1 \leq j \leq n$ **do**
      $C[i, j] \leftarrow 0$
      for $1 \leq k \leq n$ **do**
        $C[i, j] \leftarrow C[i, j] + A[i, k] * B[k, j]$
  return C

4. Prove by induction: for all $n \geq 1$,

$$\sum_{i=1}^{n} i = \frac{n^2 + n}{2}$$

5. Cross out the times that are you *unavailable* during the week.

	10:00		11:00		12:00		1:00		2:00		3:00
Monday											
Wednesday											
Thursday											

6. Why are you taking the course? If it's a requirement, what is it a requirement for?

7. (a) Describe something you liked about a course you've taken in the past.

(b) Describe something you have disliked about a course you've taken in the past.