

Directions: show all work.

## Problems

LO1. Complete the following problems.

- (a) Use the Master Theorem to determine the growth of  $T(n)$  if it satisfies the recurrence  $T(n) = 32T(n/5) + n^2 \log^3 n$ .
- (b) Use the substitution method to prove that, if  $T(n)$  satisfies

$$T(n) = 4T(n/2) + 7n^2,$$

Then  $T(n) = \Omega(n^2 \log n)$ .