Pi Mu Epsilon
Problem of the Month
September 2009

A large water tank is serviced by 3 inlet pipes and one drain pipe. Pipe A fills the tank in 6 hours alone at full force; pipe B fills the tank in 9 hours alone at full force; pipe C fills the tank in 15 hours alone at full force. The drain pipe empties a full tank in five hours if no inlet pipe is running.

Suppose the tank is empty. The drain pipe is open. Pipes A and B are turned on at full force. When the tank is one-third full, pipe C is turned on at full force. When the tank is three-quarters full, the drain pipe is closed. To the nearest minute, how long would it take to completely fill the tank in this scenario?

Problem of the Month Rules:

- Submissions must include a complete mathematical justification along with the answer.
- Submissions may only be made by individuals or groups of two and must be dated.
- Due date: September 25, 2009 before 5 p.m.; they may be given to Dr. Leigh Lunsford, Dr. Phillip Poplin, or Dr. David Shoenthal (Mathematics).

Pi Mu Epsilon Problem of the Month website:
http://www.longwood.edu/staff/shoenthaldw/potm.html