

## Rockhurst University Mathematics Problem of the Month

Congratulations to Peter Simone, winner of February's contest. He wins a prize from the Problem of the Month collection. By the way, the correct answer to the clock problem is 22, not 24. The contest is open to any currently enrolled Rockhurst student. The winner will be chosen according to who has the best solution (not just answer) to the problem. Ties will be resolved by considering the order in which the solutions were received.

Solutions should be submitted to Keith Brandt (Richardson 120) by the end of the month. The winners will receive wonderful prizes, so give these problems some thought!

### Problems For March 2004:

1. Let  $f(x) = x^3 - ax^2 - bx - c$ , where  $a$ ,  $b$ , and  $c$  are non-negative. Is it possible for  $f(x)$  to have a real zero greater than  $a + (\text{square root of } b) + (\text{cube root of } c)$ ? Can you generalize your result?
2. A line of soldiers is marching down a road at 5 mph. A messenger on horseback rides from the front to the rear and immediately returns back to the front, the total time for his excursion being 10 minutes. Assuming he rides at 10 mph, how long (in miles) is the line of soldiers?