1. (2 pts each) Circle true or false. No explanation necessary.

True or **False**: If f is a continuous function, then $\int_0^9 f(x)dx$ is between LEFT(17) and RIGHT(17).

FALSE. LEFT(17) and RIGHT(17) could both be equal and different from the integral. This will happen, for example, if $f(0) = f(9)$ and f is concave up.

True or **False**: The sum $1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \ldots$ diverges.

TRUE. This is the harmonic series.

True or **False**: Applying separation of variables to a differential equation is always more accurate than using Euler's method.

FALSE. This problem was spoiled by misphrasing. It should have said "is always *at least* as accurate as Euler's method," which is true (whenever separation is possible). It can (rarely) happen that Euler's method is exact for a particular function, in which case separation is no *more* accurate. Credit was given for both answers to this problem.

True or **False**: Let $p(x)$ be a probability density function. Then for all x, $0 \leq p(x) \leq 1$.

FALSE. The cumulative distribution function would have to be so bounded, but not the density function.

True or **False**: If a metal rod has variable density $\rho(x)$ kilograms per meter, then its mass is the product of its length and the integral of $\rho(x)$.

FALSE. No need to multiply by the length after integrating $\rho(x)$.