3. The sewer pipes in my front yard exploded last week! The utility company started working on the pipe at 1:00, but had workers coming in and out over the next few hours (I know because I kept track). Below are the number of workers on the project at 20 minute intervals after 1:00.

minutes after 1:00 (t)	0	20	40	60	80
Workers (y)	1	4	6	5	2

a) Approximate the derivative at t=60 minutes. Include units.

b) Use the trap rule to estimate the definite integral over the 80-minute period as accurately as possible and state units.

4. Evaluate the following limits or state that they do not exist. Show algebraic work for full credit.

$$a)\lim_{x\to 3}\frac{\frac{1}{x^2}-\frac{1}{9}}{x-3} \qquad b)\lim_{x\to 3}\frac{\frac{1}{x^2}+\frac{1}{9}}{x-3}$$

5. The following equation implies a certain function and important information about that function. Use your calculus knowledge to interpret the equation's hidden information. To demonstrate your understanding, draw an accurate picture of a function, a tangent line to the function, and a specific point of tangency.

$$\lim_{x\to e}\frac{\ln x-1}{x-e}=\frac{1}{e}$$