Quiz 8 Calculus 1
Section 3.10 due March 17, 2015

This quiz is due on Tuesday, March 17, 2015 at the beginning of your drill. You may use your brain, notes, book, other humans and any pet of your choice. **Your solutions must be on a separate sheet of paper, in order, stapled, de-fringed, and legible with your name on the top right corner of the first page.** If you fail to meet any of these requirements you will receive a zero. Each question is worth two points.

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1. A rectangle initially has dimensions 2cm by 4cm. All sides begin increasing in length at a rate of 1cm/s. At what rate is the area of the rectangle increasing after 20s?

2. A swimming pool is 100m long and 20m wide. Its depth decreases linearly along the length from 6m to 1m (see figure for exercise 13 from section 3.10). It is initially empty and is filled at a rate of 1 m^3/min. How fast is the water level rising 4 hours after the filling begins? How long will it take to fill the pool?

3. A 12 ft ladder is leaning against a vertical wall when Jack begins pulling the foot of the ladder away from the wall at a rate of 0.2 ft/s. How far from the wall is the bottom of the ladder at the instant when the vertical speed of the top of the ladder is equal to the horizontal speed of the bottom of the ladder?

4. Two cylindrical swimming pools are being filled simultaneously at the same rate (m^3/min). One has a radius of 5m, and the water is raising at 0.5 m/min. The larger one has a radius of 8m. How fast is the water level rising in the larger pool?

5. A conical tank with an upper radius of 4m and a height of 5m drains into a cylindrical tank with a radius of 4 m and a height of 5m. If the water level in the conical tank drops at a rate of 0.5 m/min, at what rate does the water level in the cylindrical tank rise when the water level in the conical tank is 1m?