

Math 120 A - Autumn 2013
Mid-Term Exam Number One
October 17, 2013
Answers

There were two versions of the exam.

Version A: In problem 1, the top edge of the pizza is 6 inches long.

1.

$$\text{area} = \begin{cases} \frac{1}{2}x(4 + \frac{3}{2}x + 4) & \text{if } 0 \leq x \leq 2, \\ \frac{1}{2}(2)(4 + 7) + 7(x - 2) & \text{if } 2 \leq x \leq 8 \end{cases}$$

2. (a) 2.3788162 hours (b) 3.4641016 hours

3. (a) 19.235398 km east and 1.8690265 km south of the center of the forest. (b) This point is inside the forest because the distance from this point to the origin, 19.3259 km, is less than the radius of the forest.

4. (a) $6 - 4x$ (b) area=8

Version B: In problem 1, the top edge of the pizza is 7 inches long.

1.

$$\text{area} = \begin{cases} \frac{1}{2}x(5 + 2x + 5) & \text{if } 0 \leq x \leq 2, \\ \frac{1}{2}(2)(5 + 9) + 9(x - 2) & \text{if } 2 \leq x \leq 9 \end{cases}$$

2. (a) 2.461538 hours (b) There are two acceptable answers: 3.21895 hours, or 3.7712361 hours.

3. (a) 6.8965517 km south and 7.7586206 km north of the center of the forest. (b) The distance from this point to the origin is 10.38068 km, which is greater than the radius of the forest, so the point is outside the forest.

4. (a) $4 - 4x$ (b) area=4.9