8. At the Michigan-Ohio State basketball game this year, the Michigan Band discovers that the amount of time it spends playing "Hail to the Victors" has a direct impact on the number of points our team scores. If the band plays for x minutes, then the Wolverines will score

$$W(x) = -.48x^2 + 7.2x + 63$$

points in the game. Assume that the band can play for a maximum of 10 minutes.

(a) (5 points) How long should the band play to maximize the number of points Michigan scores? Show your work and explain.

(b) (5 points) The band affects how many points Ohio State scores as well. When the U-M band plays for x minutes the Buckeyes score

$$B(x) = -x^2 + 8x + 84$$

points in the game. Find the number of minutes the band should play to maximize the margin of victory for Michigan (*i.e.,* the points by which Michigan wins or loses). Again, please show all work.

(c) (2 points) What will be the score of the game for the case you found in part (b)?

Michigan: _____ points

Ohio State: _____ points