

1. The rate of flow of an 80 ft. wide river is given by the equation  $r = -0.01X + 0.8X^2$  where  $r$  is the rate in miles per hour and  $X$  is the distance from the shore in feet. Tim does not want to paddle his canoe against a current that is faster than 5 miles per hour. At what distance from the river must he paddle in order to avoid a current of 5 miles per hour?

2. The class of 2020 wants to buy t-shirts. The cost of the t-shirts can be modeled by the equation  $C = 0.1X^2 + 2.4X + 25$  where  $C$  is the amount it costs to buy  $X$  t-shirts. How many t-shirts can they buy for \$430?