

1. [8pts] An object with initial temperature  $390^\circ$  F is placed in a room with constant temperature  $70^\circ$  F. One minute later its temperature is  $230^\circ$  F. How long will it take the object to cool off to a temperature of  $80^\circ$  F?

2. [8pts] Determine whether the DE:  $5x^2 \frac{dy}{dx} = y^2 + 5yx$  is linear, separable, or homogeneous and then find a general solution for it.