

3. [9 points] Note that the problems on this page are not related to each other.
(You do not have to show work. However work shown may be used to award partial credit.)
- a. [3 points] A salesperson at a local department store earns a base salary of \$750 per month plus a commission (bonus) of 8% of her total sales. Let $M(d)$ be the employee's total earnings, in dollars, in a month in which she sells d dollars worth of merchandise. Find a formula for $M(d)$.

Answer: $M(d) =$ _____

- b. [3 points] Suppose that the half-life of caffeine in a student's bloodstream is 5 hours. If the student drinks a latte that contains 150 mg of caffeine at 8 am, find a formula for $C(h)$, the amount of caffeine (in milligrams) from that latte that remains in the student's bloodstream h hours after 8 am.

Answer: $C(h) =$ _____

- c. [3 points] The monthly revenue of a local business varies seasonally from a low of \$35,000 in February to a high of \$75,000 in August (and back down to \$35,000 the following February). Let $R(t)$ be this company's monthly revenue, in thousands of dollars, t months after January. (Note that $t = 0$ represents January, $t = 1$ represents February, etc.) Assuming that $R(t)$ is a sinusoidal function, find a formula for $R(t)$.

Answer: $R(t) =$ _____