**1**. [8 points]

   **a**. [3 points] Em, an employee at the *Math-tas-tíque Dog Boutique*, earns \$750 per week in salary and earns an additional 5% of her total sales that week (her *commission*). Write a formula for $M(x)$, the amount, in dollars, Em will earn in a week in which she is responsible for \$$x$ in sales.

> *Solution:* We know that Em will make \$750 plus 0.05 times whatever the value of her sales were $(x)$. So we get the linear function below.
> $$M(x) = \underline{\hspace{2cm} 750 + 0.05x \hspace{2cm}}$$

   **b**. [3 points] Compute the value of $M^{-1}(1000)$ and describe its meaning in the context of the problem.
*Show all work. Give your final answer in decimal form, NOT exact form.*

> *Solution:* Algebraically-speaking, $M^{-1}(1000)$ means the input $x$ that will give us $M(x) = 1000$. So, using the formula above, we need to find $x$ such that:
>
> $$750 + 0.05x = 1000$$
>
> Solving this:
> $$0.05x = 250$$
> $$x = 5000$$
> $$M^{-1}(1000) = \underline{\hspace{2cm} \textbf{5000} \hspace{2cm}}$$

**Meaning:**

> *Solution:* In order to make a salary of \$1000 in one week, Em needs to be responsible for \$5000 in sales.

   **c**. [2 points] Let $R(w)$ be the function giving the dollar amount of Em's sales in the $w$th week of 2023. Choose the best description of the meaning of $M(R(23))$ from the choices below.

      ○ A. The week in which Em makes \$23 in commission.

      ○ B. The amount of commission Em makes in the 23rd week of 2023.

      ○ C. The total amount Em gets paid in 2023.

      ☐ ○ D. The total amount Em gets paid in in the 23rd week of 2023.

      ○ E. This doesn't make sense because we cannot plug a number of weeks into the function $M$.