8. [13 points] The *karat rating* of a gold alloy is defined to be 24 times the concentration of gold in the alloy. That is, the karat rating is $24 \cdot \dfrac{\text{mass of gold in alloy}}{\text{total mass of alloy}}$.

Rose gold is an alloy of gold and copper. A metallurgist is experimenting to see how the color of rose gold changes when more or less copper is added. In each trial, the metallurgist starts with 15 grams of gold and 5 grams of copper and then adds or removes copper to change the composition. Let $K(c)$ be the karat rating of the metallurgist's rose gold if c grams of copper have been added to ($c > 0$) or removed from ($c < 0$) the initial 5 grams.

a. [2 points] Find $K(0)$.

Answer: $K(0) =$ _____

b. [5 points] In the context of this problem, what are the domain and range of $K(c)$? (You may use either interval notation or inequalities to describe the domain and range.) *Show your work and explain your reasoning.*

Domain: _____ **Range:** _____

c. [3 points] Find a formula for $K(c)$.

Answer: $K(c) =$ _____

One variety of *white gold* is an alloy of gold and nickel.
Let $V(k)$ be the value, in dollars per gram, of k karat white gold.

d. [3 points] Give an interpretation, in the context of this problem, of the equation $V^{-1}(14) = 10$. *Use a complete sentence and include units.*