

3. [8 points] A local clothing store *Amaizing T-Shirts* sets the price per t-shirt based on how many t-shirts a customer purchases. Let $P(s)$ be the **price per t-shirt**, in dollars, when a customer purchases s t-shirts. Note that $P(s)$ is an invertible function.

a. [2 points] Describe the meaning of $P^{-1}(10)$ in the context of the problem.

Solution: $P^{-1}(10)$ is the number of shirts that must be purchased in order for each shirt to cost \$10.

- b. [2 points] Write expression for the **total price** for 156 t-shirts. Your answer may involve P and/or P^{-1} .

Answer: \$ $156 * P(156)$

- c. [4 points] *Amaizing T-Shirts* offers a customer loyalty program. When a customer buys s t-shirts, they get $L(s)$ loyalty points. Describe the meaning of the following equations or explain why they don't make sense in context:

$$L(100) = 10$$

Solution: When a customer buys 100 shirts, they get 10 loyalty points.

$$P(L^{-1}(20)) = 9$$

Solution: When a customer gets 20 loyalty points, it means they've purchased enough shirts for them to cost \$9 each.