5. [8 points] For each part of this problem, you must show every step of any algebraic work that is required.

a. [3 points] The quadratic function \( q(x) \) has its vertex at the point \((2, 4)\) and a zero at \( x = 5 \). Find a formula for \( q(x) \).

Answer: \( q(x) = \) 

b. [5 points] Find a formula for the quadratic function \( r(x) \) graphed below.

Answer: \( r(x) = \)