Name:

Problem 1: Consider the equation

$$ax + by = c,$$

where $a, b, c \in \mathbb{Z}$. Theorem 2.9 in Section 2.5 of the book states when this equation has integer solutions (alternatively, when we want integer solutions we might say we are solving a *Diophantine* equation).

    Use this theorem to determine if the equation

$$2x + 6y = 5$$

has any integer solutions. Explain neatly but briefly how you are applying the theorem to obtain your conclusion.