Assignment 9

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Papoulis chap 5 Ex 5.2

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Problem

Q)The distribution of $ax + b$.

Solution

Let $y = ax + b$
To find $F_y(y)$, we must find the values of x such that $ax + b \leq y$.

- a) if $a > 0$, then $ax + b \leq y$ for $x \leq \frac{y-b}{a}$. Hence

$$F_y(y) = P(x \leq \frac{y-b}{a}) = F_x(\frac{y-b}{a}), \quad a > 0 \tag{1}$$

- b) if $a < 0$, then $ax + b \leq y$ for $x > \frac{y-b}{a}$. Hence

$$F_y(y) = P(x \geq \frac{y-b}{a}) = 1 - F_x(\frac{y-b}{a}), \quad a < 0 \tag{2}$$

...

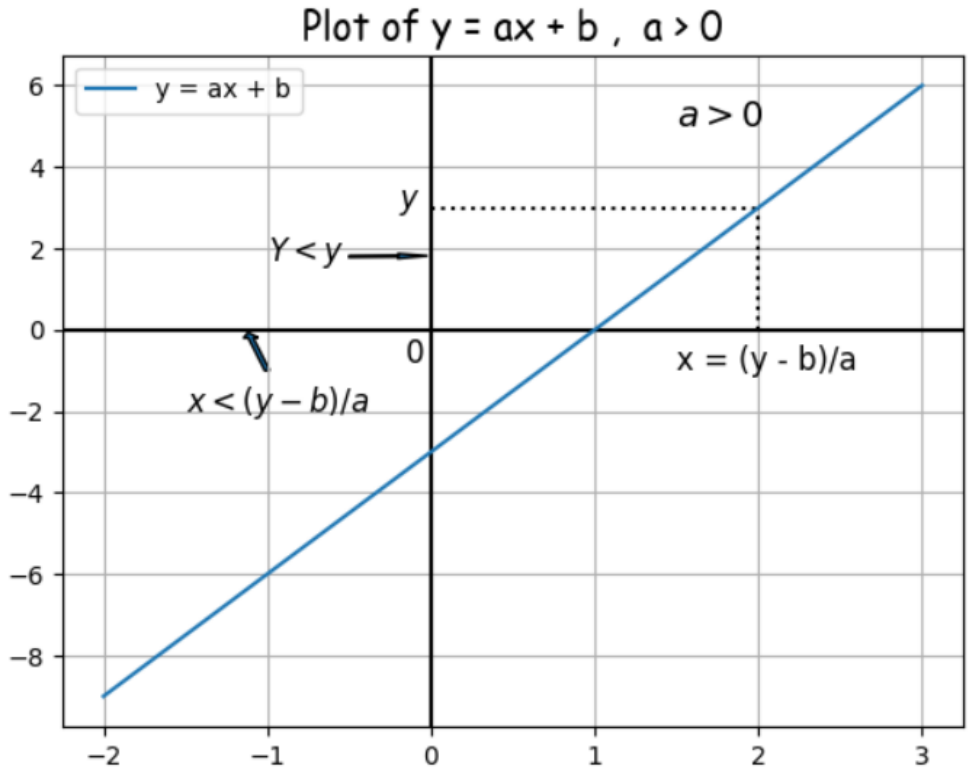

Figure: FIG 1

CODES

Python

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