Since $Y = |X|$, you can visualize the PDF for any given y as

$$f_Y(y) = \begin{cases} f_X(y) + f_X(-y), & \text{if } y \geq 0, \\ 0, & \text{if } y < 0. \end{cases}$$

Also note that since $Y = |X|$, $Y \geq 0$.

1. $f_X(x) = \begin{cases} \frac{1}{3}, & \text{if } -2 < x \leq 1, \\ 0, & \text{otherwise.} \end{cases}$
   So $f_X(x)$ for $-1 \leq x \leq 0$ gets added to $f_X(x)$ for $0 \leq x \leq 1$:

   $$f_Y(y) = \begin{cases} 2/3, & \text{if } 0 \leq y \leq 1, \\ 1/3, & \text{if } 1 < y \leq 2, \\ 0, & \text{otherwise.} \end{cases}$$

2. Here we are told $X > 0$, so there are no negative values of X that need to be considered. Thus,

   $$f_Y(y) = f_X(y) = \begin{cases} 2e^{-2y}, & \text{if } y \geq 0, \\ 0, & \text{otherwise.} \end{cases}$$

3. For the general case, when $y \geq 0$,

   $$\mathbf{P}(Y \leq y) = \mathbf{P}(|X| \leq y) = \mathbf{P}(-y \leq X \leq y) = \int_{-y}^{y} f_X(x)\,dx = F_X(y) - F_X(-y).$$

   Taking derivatives of both sides, we have

   $$f_Y(y) = f_X(y) + f_X(-y), \quad y \geq 0.$$