1. Consider the shown in Figure 29-19 [which is the solution of Problem 29-1(a) page 263]. Prove that this circuit performs the operation \( \text{out} = 3x - 5y \).

2. Consider the shown in Figure 29-20 (which is the solution of Problem 29-1(b) page 263). Prove that this circuit performs the operation \( \text{out} = 12x - 6\frac{dy}{(dt)} \).

3. Problem 29-2 part (a) only.

4. Consider the pink noise with power spectral density of the form

\[
\frac{dP}{df} = \frac{A}{f},
\]

where \( A \) is a positive constant.

(a) Compute the power associated to the pink noise within a frequency band \([f_1, f_2]\)?

(b) Show that this type of noise is such that the power in bandwidth \([f_1, 10 \times f_1]\) is constant.

(c) What happens if \( f_1 \to 0 \)? Does this result makes sense?

(d) What happens if \( f_2 \to +\infty \)?

1