

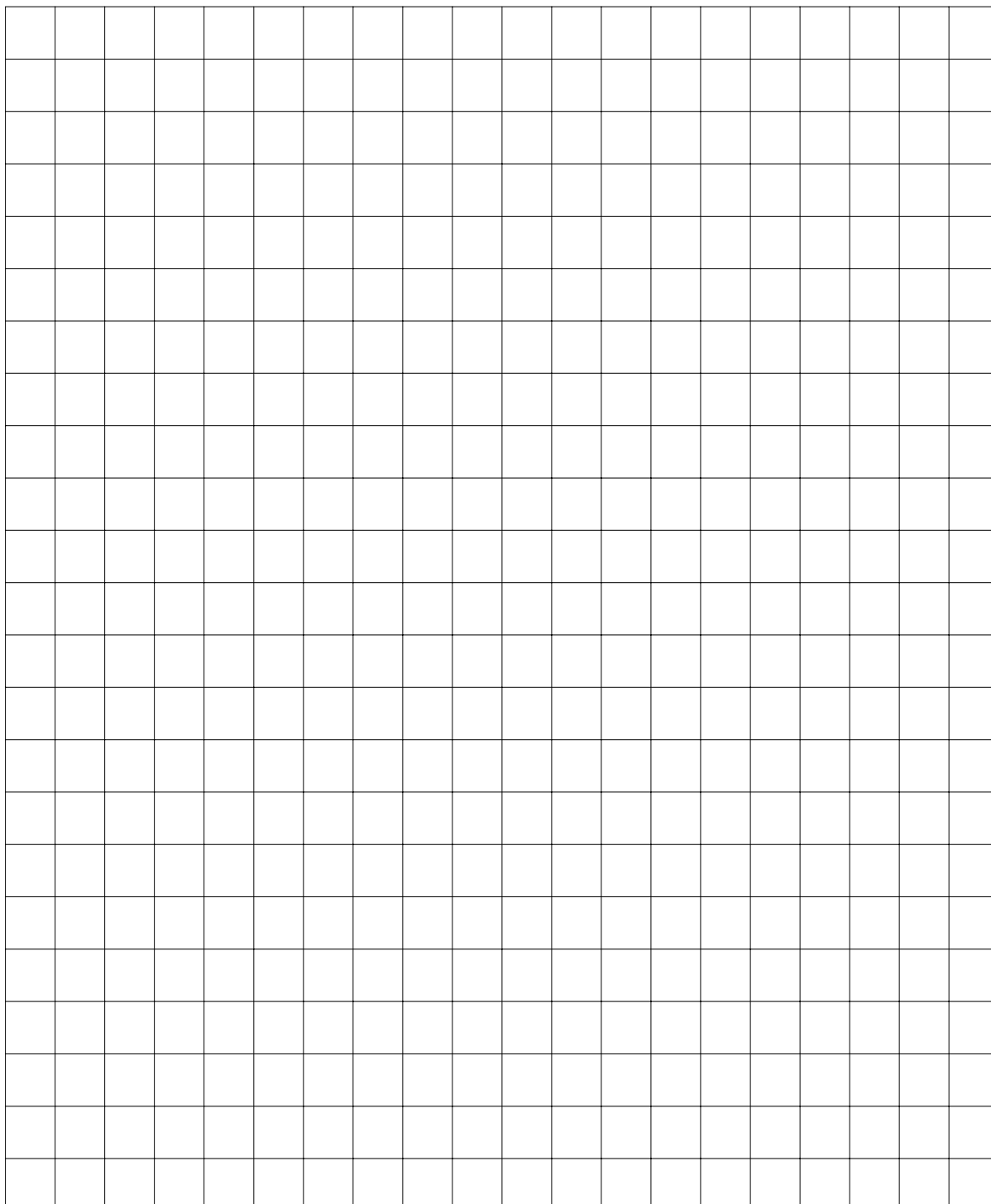
Question 1

20 (=14+6) points

- (1) Simplifier la fraction rationnelle

$$R(x) = \frac{4x^3 + 4x^2 - 7x + 2}{4x^3 + 8x^2 - x - 2}$$

après en avoir déterminé les conditions d'existence. (**Aide** : le dénominateur se factorise à l'aide de la méthode du groupement de termes !)



(2) Calculer : $R\left(\frac{1}{2}\right)$, $R\left(\frac{1}{\sqrt{2}}\right)$, $R(-2)$ et $R(0)$.

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Question 2

16 (=12+4) points

(1) Résoudre les équations :

a) $x^3 + x^2 = 5x + 5$

b) $2x^2 = x + 21$

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- (2) Soit $P(x) = 4x^2 - 2$. Déterminer les réels x tels que $P(x) = 7$.

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Question 3

12 (=4+8) points

- (1) Déterminer le paramètre réel m tel que le polynôme $A(x) = mx^2 - (2m + 1)x + 3$ soit divisible par $x + 3$.
- (2) Après avoir remplacé m par la valeur trouvée, déterminer les racines de $A(x)$.

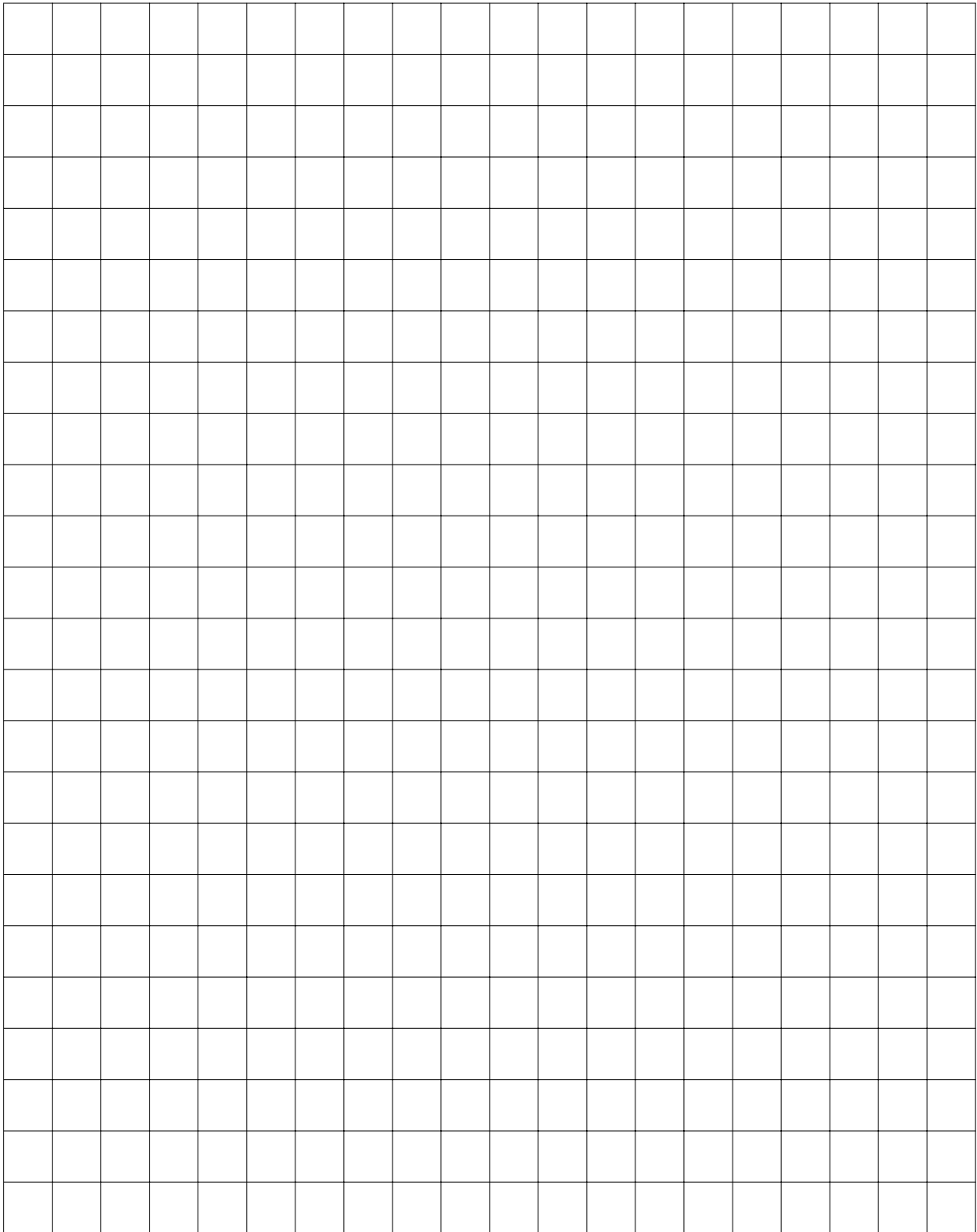
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Question 4

12 points

Résoudre dans \mathbb{R} le système d'inéquations suivant :

$$\begin{cases} 1 - \frac{x-3}{18} \leq \frac{3x+1}{5} - \frac{7(1-x)}{30} \\ \frac{x}{7} - \frac{1}{2} \left(\frac{3}{4} - \frac{4x-2}{3} \right) > 0 \end{cases}$$



G. Lorang