1. Write in R the following arithmetic expressions:

   (a) $\frac{1}{2(3+x)^2} - \frac{2}{1+\frac{1}{4x}-5}x$

   (b) $\log(x+5^{2(x+1)}) + 18x\exp(-x)$

   (c) $\cos\left(x+4x\frac{1}{x+7}\right)+32$

   (d) $\log\left(\frac{x}{1-x}\right)$

   (e) $\frac{\exp(-x)x^x}{x!}$

   (f) $e^{-t^{1/\theta}}$

   (g) $(1+t)^{-1/\theta}$

   (h) $1-(1-e^{-t})^{1/\theta}$

   (i) $-\frac{\log\left(1-(1-e^{-\theta})e^{-t}\right)}{\theta}$

   (j) $e^{-(x^\theta+y^\theta)^{1/\theta}}$

   (k) $(x^{-\theta}+y^{-\theta}-1)^{-1/\theta}$

   (l) $1-(x^\theta+y^\theta-x^\theta y^\theta)^{1/\theta}$

   (m) $-\frac{1}{\theta}\log\left\{1+\frac{(e^{-\theta x}-1)(e^{-\theta y}-1)}{e^{-\theta}-1}\right\}$

   (n) $xye^{(x^{-\theta}+y^{-\theta})^{-1/\theta}}$

   (o) $\theta\cos^{\theta+1}x\sin\left\{(\theta+1)(y+\theta\frac{\pi}{2})\right\}$

2. If x is a given value. Write down the commands to calculate y as below:

   (a) $y=\begin{cases}12, & x>0\\ 6, & x\le 0\end{cases}$

   (b) $y=\begin{cases}3, & x=5\\ 4, & x>5\\ 6, & x<5\end{cases}$

   (c) $y=\begin{cases}5, & 0<x<1\\ -12, & x\le 0, x\ge 1\end{cases}$

3. A student can attend the modules of the next semester if :

   (a) In all modules of the current semester the grades are grater than the base (50).

   (b) If fails in one course and the average grade of the current semester is greater than 60.

   (c) If fails in two courses but the grades are more than 40 and the average grade is greater than 70.

   Write a boolean expression for checking if the grades of a student in 4 modules allow him to attend the courses of the next semester.