TP1 (Correction)

Exercise 1: Perform the following functions in Matlab:

1. $f : [0, 2\pi] \to \mathbb{R},\ x \mapsto \sin(x) + \frac{1}{3}\sin(3x) + \frac{1}{5}\sin(5x) + \frac{1}{7}\sin(7x),$
2. $f : [-3, 3] \to \mathbb{R},\ x \mapsto \sqrt[3]{x^2|x-2|},$
3. $f : [10^{-2}, \pi] \to \mathbb{R},\ x \mapsto \sqrt{x}\sin(1/x).$

1. x=pi ;
y = sin(x)+sin(3*x)/3+sin(5*x)/5+sin(7*x)/7

2. x=2 ;
y = (x.^2.*abs(x-2)).^(1/3)

3. x=pi ;
y = sqrt(x).*sin(1./x)

Exercise 2: Perform the following function in Matlab:

$$f : [-3, 3] \to \mathbb{R}$$
$$x \mapsto (1+x)e^{-x^2+3x\cos(x)} - (1+x^4)^2\sin(x).$$

x=-3;
y=(1+x).*exp(-x.^2+2*x.*cos(x))-(1+x.^4).^2.*sin(x)

Exercise 3: Perform the following function in Matlab:

$$g(t) = e^{\cos(t)}\sin(t-1)^2 + 2\sqrt{t^3+7t}.$$

t=2 ;
y=exp(cos(t)).*sin(t-1).^2+2*sqrt(t.^3+7*t)

Exercise 4:
Give MATLAB commands to evaluate the following expressions:

1. $logarithme_{10}(2)$
2. $\frac{1}{1+\frac{1}{1+\frac{1}{2}}}$
3. $-x^6 - \frac{5}{7}x^3 + x^2 + 5, \text{ pour } x = 1, x = 4$

4. $\frac{1}{\sqrt{8^3+2}} - \frac{2\sin(45)}{e^2} + \ln(4)$ Les angles sont donnés en degré.

5. $\frac{x^3 \sin(\frac{4\pi}{2})^2}{\cos(2\pi-1)}$, pour $x = e^3$

6. $-2\,ln(5x) + \sqrt{4x^3+1}$, pour $x = -3i$

7. $\frac{4}{3}\pi R^3$ où $R = 3cm$

8. $z \leftarrow \frac{|2n^5-3|}{\sqrt{4n^2+\ln(6n)}}$

9. $x \leftarrow \frac{e^{\sqrt{x}}}{2y-1} + |x| - \frac{1}{y^2+3}$

10. $w \leftarrow \frac{b}{2} \times \sqrt{c^2 - \left(\frac{b}{2,5}\right)^2}$;

11. $y \leftarrow e^{2-\sqrt{b^3-\frac{1}{a}}}$;

1) >> log10(2)
2) >> (1)/(1+(1)/(1+1/2))
3) >> X=1 ;
>> -x^6-(5/7)*x^3+x^2+5
4 >> x = (1/SQRT(8^3+2))-(2*sin(45)/exp(2))+log(4)
5 >> x= exp(3) ;
>> x^3*sin(4*4pi/2)^2/cos(2*pi-1)
6) >> x= -3*i ;
>> -2*log(5*x)+SQRT(4*x^3+1)
7) >> R= 3;
>> (4/3)*pi*R^3
8) >> Z= abs(2*n^5-3)/SQRT(4*n^2+log(6*n))
9)>> Z= exp (SQRT(x))/2*y-1+abs(x)-1/(y^2+3)
10)>> W= (b/2)*SQRT(c^2-(b/2.5)^2)
11)Y= exp(2-SQRT(b^2-1/a))