

Exercices d'applications des mathématiques - Corrigé de la série n° 4

Cours 3AMOS01

1. Courbes.

Il suffit de poser

- 2 $x = (t - 2\pi) / (2\pi) .* \cos(5 * t);$
- 3 $y = (t - 2\pi) / (2\pi) .* \sin(5 * t);$
- 4 $z = t / (2\pi);$

2. Courbes.

Il suffit de poser

- 2 $x = 0.2 * \cos(15 * t);$
- 3 $y = 0.2 * \sin(15 * t);$
- 4 $z = t / \pi - 1;$

3. Courbes.

Il suffit de poser

- 2 $x = 0.5 * \cos(t);$
- 3 $y = 0.5 * \sin(t);$
- 4 $z = 0.2 * \sin(10 * t);$

4. Courbes.

Il suffit de poser

- 2 $x = 0.8 * \cos(t);$
- 3 $y = 0.8 * \sin(t);$
- 4 $z = 0.8 * \sin(22 * t);$

5. Courbes.

Il suffit de poser

- 2 $x = (0.5 + 0.5 * t / (2 * \pi)) .* \cos(10 * t);$
- 3 $y = (0.5 + 0.5 * t / (2 * \pi)) .* \sin(10 * t);$
- 4 $z = t / \pi - 1;$

6. Courbes.

Il suffit de poser

- 2 $x = (0.5 + 0.1 * \sin(100 * t)) .* \cos(5 * t);$
- 3 $y = (0.5 + 0.1 * \sin(100 * t)) .* \sin(5 * t);$
- 4 $z = t / \pi - 1;$

7. Courbes 3D.

Il suffit de compléter le script comme suit:

```

1  clf
2  clear
3  t=0:2*pi/1000:2*pi;
4  x=(0.5+0.2*sin(2*t)).*cos(21*t);
5  y=(0.5+0.2*sin(2*t)).*sin(21*t);
6  z=-1+t/pi;
7  plot3(x,y,z)
8  view(18,11)
9  xlabel('x')
10 ylabel('y')
11 zlabel('z')
12 axis([-1,1,-1,1,-1,1])

```

8. Courbes 3D.

Il suffit de compléter le script comme suit:

```

1  clf
2  clear
3  t=-1:2/20000:1;
4  x=(-0.8*abs(t)+1).*cos(80*t);
5  y=(-0.8*abs(t)+1).*sin(80*t);
6  z=t;
7  plot3(x,y,z)
8  xlabel('x')
9  ylabel('y')
10 zlabel('z')
11 axis([-1,1,-1,1,-1,1])

```

9. Courbes.

Il suffit de poser

```

3  t=0:0.001:2*pi;
4  x=cos(3*t);
5  y=sin(3*t);
6  z=t/pi-1+0.05*sin(200*t);

```

10. Courbes.

Il suffit de poser

```

3  t=0:0.001:2*pi;
4  x=0.8*cos(3*t)+0.2*sin(100*t);
5  y=0.8*sin(3*t);
6  z=t/pi-1;

```

11. Courbes.

Il suffit de poser

```

3  t=0:0.001:2*pi;
4  x=t/pi-1;
5  y=0.3*cos(10*t);
6  z=0.9*sin(10*t);

```

12. Courbes.

Il suffit de poser

```
3 t=0:0.001:2*pi;  
4 x=(0.8-0.5*abs((t-pi)/pi)).*cos(50*t);  
5 y=t/pi-1;  
6 z=(0.8-0.5*abs((t-pi)/pi)).*sin(50*t);
```

13. Courbes.

Il suffit de poser

```
3 t=0:0.001:2*pi;  
4 x=t/pi-1;  
5 y=(0.3+0.5*abs((t-pi)/pi)).*cos(50*t);  
6 z=(0.3+0.5*abs((t-pi)/pi)).*sin(50*t);
```

14. Courbes.

Il suffit de compléter le script comme suit:

```
1 clf  
2 clear  
3 t=0:(2*pi)/1000:2*pi;  
4 x=-1+t/(pi);  
5 y=(0.5+0.2*sin(2*t)).*cos(40*t);  
6 z=0.2.*sin(40*t);  
7 plot3(x,y,z)  
8 axis([-1,1,-1,1,-1,1])  
9 xlabel('x')  
10 ylabel('y')  
11 zlabel('z')
```
