

1.

$X=8.25; Y=1.8;$

Y^3+X

a) ans =

14.0820

$(5*Y)^{(X-2*Y)}$

b) ans =

2.7367e+04

$\exp(4*X*Y)$

d) ans =

6.2675e+25

$\log(Y^X-X)$

c) ans =

4.7824

2.

`fplot('5*sin(X)',[-pi,pi])`

`hold`

Current plot held

`fplot('5*cos(X)',[-pi,pi])`

100%

10
10

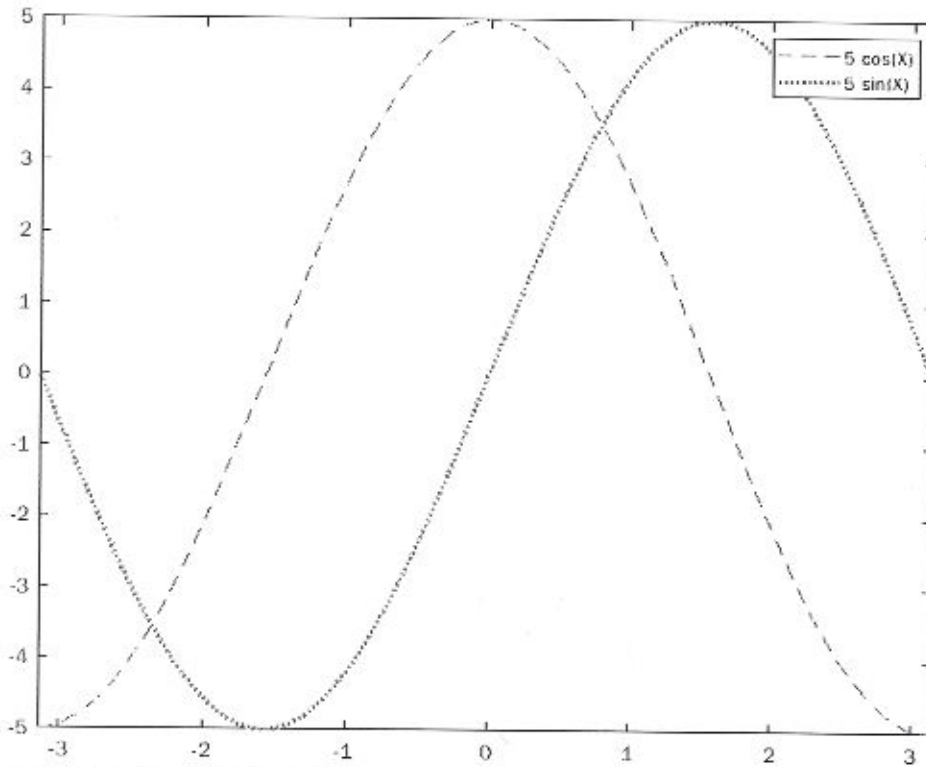


Figure 1 graph of $5\sin x$ and $5\cos x$

3. `syms x`

`solve(5*x^3-2*x^2+3*x-3)`

`solve(5*x^3-2*x^2+3*x-3)`

`ans =`

`root(z^3 - (2*z^2)/5 + (3*z)/5 - 3/5, z, 1)`

`root(z^3 - (2*z^2)/5 + (3*z)/5 - 3/5, z, 2)`

`root(z^3 - (2*z^2)/5 + (3*z)/5 - 3/5, z, 3)`

`double(ans)`

`ans =`

`0.7213 + 0.0000i`

`-0.1607 - 0.8978i`

`-0.1607 + 0.8978i`

4.

`Q=[2/sqrt(8) 2/sqrt(8);2/sqrt(8) -2/sqrt(8)]`

`Q =`

`0.7071 0.7071`

`0.7071 -0.7071`

`X=[3 4;-1 0]`

`X =`

$$\begin{matrix} 3 & 4 \\ -1 & 0 \end{matrix}$$

2

Q'

ans =

$$\begin{matrix} 0.7071 & 0.7071 \\ 0.7071 & -0.7071 \end{matrix}$$

2

IQ=inv(Q)

IQ =

$$\begin{matrix} 0.7071 & 0.7071 \\ 0.7071 & -0.7071 \end{matrix}$$

2

(Q*X*Q')^6

ans =

$$\begin{matrix} -91.0000 & 45.0000 \\ -180.0000 & 44.0000 \end{matrix}$$

5

$$\frac{20}{20}$$

Q*(X^6)*Q'

ans =

$$\begin{matrix} -91.0000 & 45.0000 \\ -180.0000 & 44.0000 \end{matrix}$$

5

5.

clear all

syms x y

y=5*exp(x)*sin(x),y1=diff(y),y2=diff(y,2),y4=diff(y,4)

y =

5*exp(x)*sin(x)

y1 =

5*exp(x)*cos(x) + 5*exp(x)*sin(x)

y2 =

10*exp(x)*cos(x)

y4 =

$-20 \cdot \exp(x) \cdot \sin(x)$

$y^4 + y^2 + 3y^2$ ✓

ans =

$100 \cdot \exp(2x) \cdot \cos(x)^2 + 475 \cdot \exp(2x) \cdot \sin(x)^2$

simplify(ans) ✓

ans =

$25 \cdot \exp(2x) \cdot (15 \sin(x)^2 + 4)$

$$\frac{25}{25}$$

6.

$z = [22.8 \ 22.6 \ 22.4 \ 25.1 \ 21.6 \ 24.6 \ 21.7 \ 21.9 \ 21.7 \ 22.8 \ 23.2 \ 21.9 \ 24.8 \ 22.2 \ 22.0];$

$\bar{x} = \text{mean}(z), m = \text{median}(z), s = \text{std}(z, 1)$

$\bar{x} =$

22.7533 ✓

$m =$

22.4000 ✓

$s =$

1.1354 ✓

$$\frac{15}{15}$$