

Kieran Williams 1809801

MatLab Exam

83%

Agree
SA

1.

>> x=2.3; y=3.1;

>> x^2-y

ans =

2.1900

>> (4*y)^x-y

ans =

324.1426

>> exp(3*x*y)

ans =

1.9479e+09

>> log10((y^x)-x)

ans =

1.0490

9
10

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2. a)

>> clear all

>> Q=[2/sqrt(8) 2/sqrt(8); 2/sqrt(8) -2/sqrt(8)]; X=[3 4;-1 0]

X =

3 4

-1 0

>> Q', Q^-1

ans =

0.7071 0.7071

0.7071 -0.7071

ans =

0.7071 0.7071

0.7071 -0.7071

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b) $\gg (Q^*X^*Q')^6, Q^*(X^6)^*Q'$

5, 5

ans =

-91.0000 45.0000

-180.0000 44.0000

19
20

ans =

-91.0000 45.0000

-180.0000 44.0000

3.

$\gg \text{fplot}('sin(x)', [-pi, pi])$

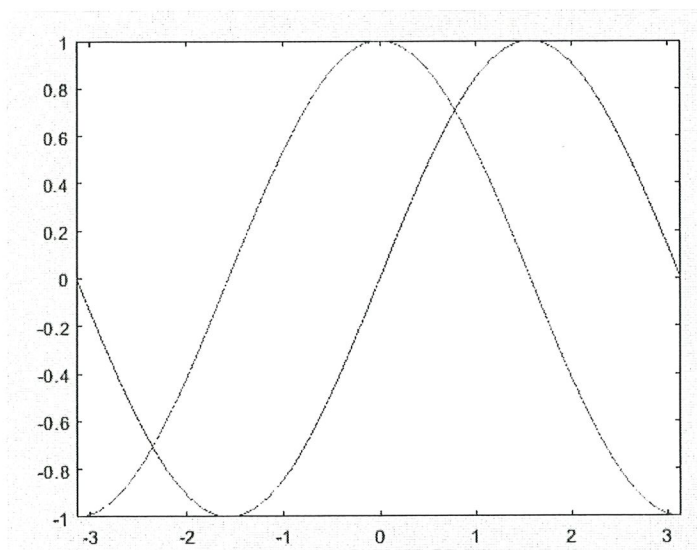
5
2

$\gg \text{hold}$

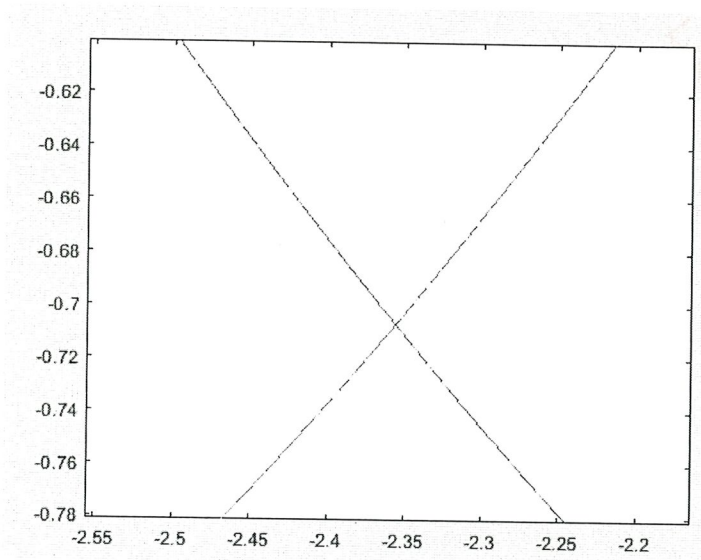
Current plot held

$\gg \text{fplot}('cos(x)', [-pi, pi])$

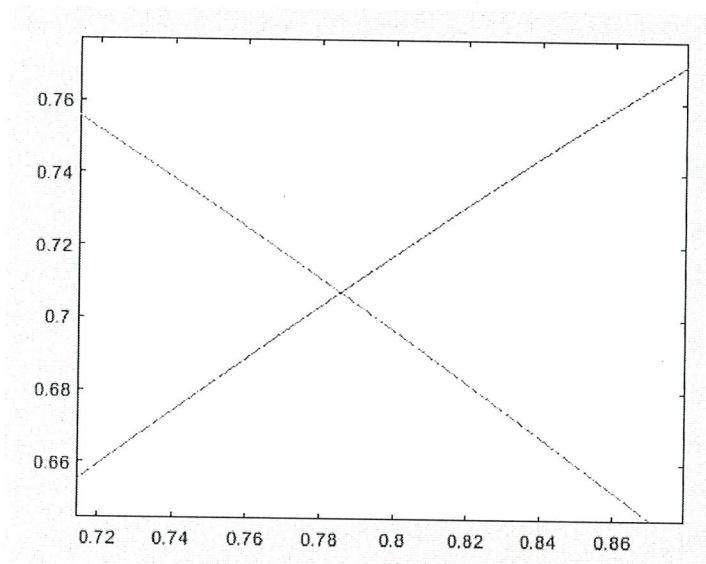
5



3



Intersection (-2.35, -0.71)



Intersection (0.78, 0.71)

$$\frac{24}{25}$$

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4.

>> clear all

>> syms x

>> solve(-4*x^3+2*x^2-3*x+1)

4



ans =

root(z^3 - z^2/2 + (3*z)/4 - 1/4, z, 1)

root(z^3 - z^2/2 + (3*z)/4 - 1/4, z, 2)

root(z^3 - z^2/2 + (3*z)/4 - 1/4, z, 3)

>> sum(ans)

2



ans =

root(z^3 - z^2/2 + (3*z)/4 - 1/4, z, 1) + root(z^3 - z^2/2 + (3*z)/4 - 1/4, z, 2) + root(z^3 - z^2/2 + (3*z)/4 - 1/4, z, 3)

$\frac{6}{20}$



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5. >> clear all

>> syms x y

>> y=3*exp(x)*sin(x), y1=diff(y), y2=diff(y,2), y4=diff(y,4)

y =

$3 \cdot \exp(x) \cdot \sin(x)$

y1 =

$3 \cdot \exp(x) \cdot \cos(x) + 3 \cdot \exp(x) \cdot \sin(x)$

y2 =

$6 \cdot \exp(x) \cdot \cos(x)$

y4 =

$-12 \cdot \exp(x) \cdot \sin(x)$

>> y4^2+y2^2+4*y^2

ans =

$36 \cdot \exp(2 \cdot x) \cdot \cos(x)^2 + 180 \cdot \exp(2 \cdot x) \cdot \sin(x)^2$

>> simplify(ans)

ans =

$36 \cdot \exp(2 \cdot x) \cdot (4 \cdot \sin(x)^2 + 1)$

Handwritten notes in red and green ink. A large red circle contains the fraction $\frac{25}{25}$. There are several red and green checkmarks and lines scattered around the code and the circle.