```
%Gino Rospigliosi
%Math 241-Matlab Project 1
%TA:Weikun Wang
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```
%Task 1:
syms x;
subs(x^3-3*x^2-x,-1)
```

```
ans =

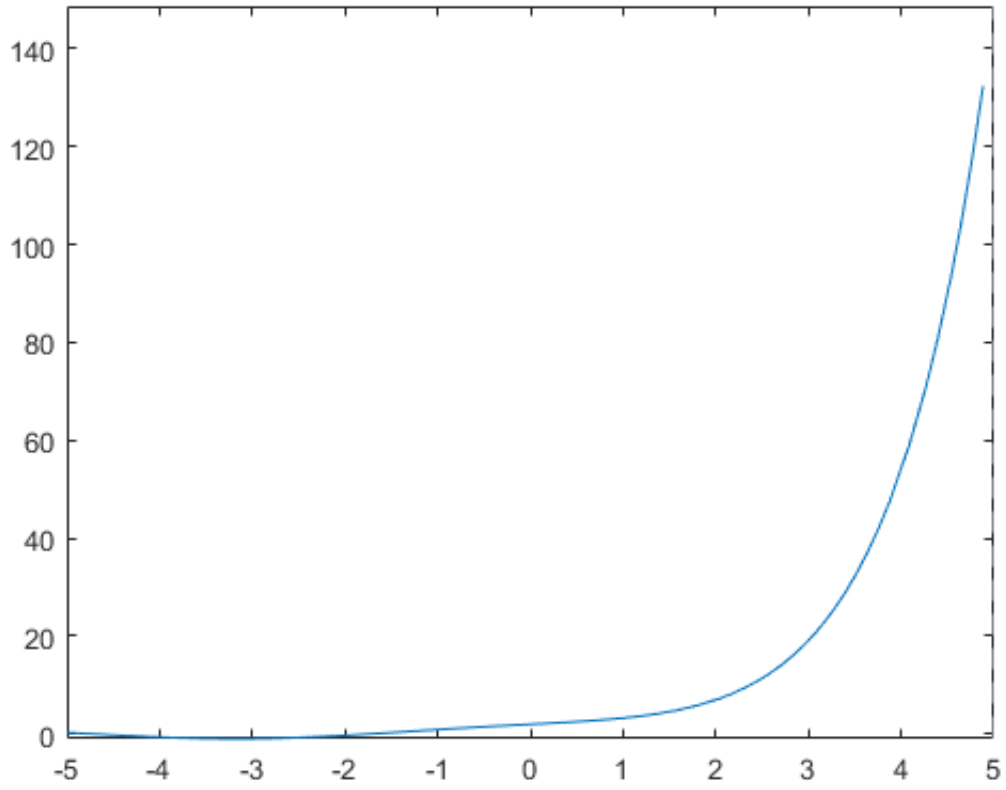
-3
```

```
%Task 2:
syms x;
subs(1/x+exp(x)+x^2,3)
```

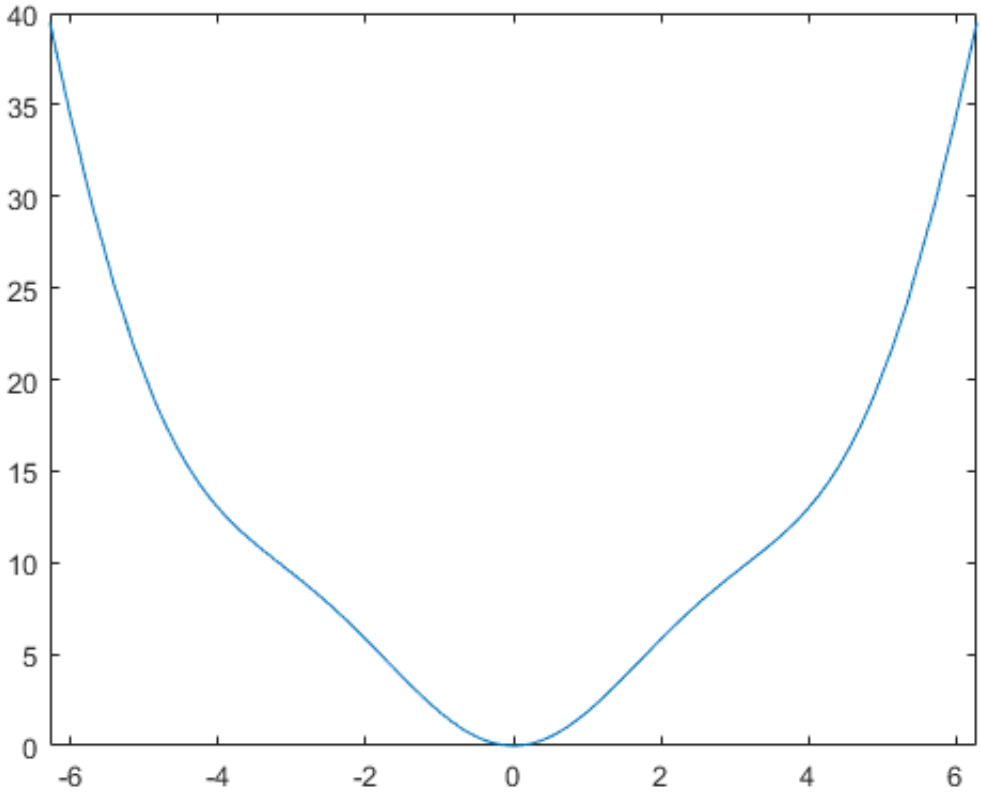
```
ans =

exp(3) + 28/3
```

```
%Task 3:
syms x;
fplot(cos(x)+exp(x))
```




```
%Task 4:
syms x;
fplot(x^2+x*sin(x),[-2*pi,2*pi])
```




```
%Task 5:
syms x;
subs(diff(x^2/(x+1)),-2)
```

```
ans =

0
```

```
%Task 6:
syms x;
int(x+x^2*tan(x))
```

```
ans =

x^2/2 - x^2*log(exp(x*2i) + 1) - polylog(3, -exp(x*2i))/2 + (x^3*1i)/3 + x*polylog(2, -exp(x*
2i))*1i
```

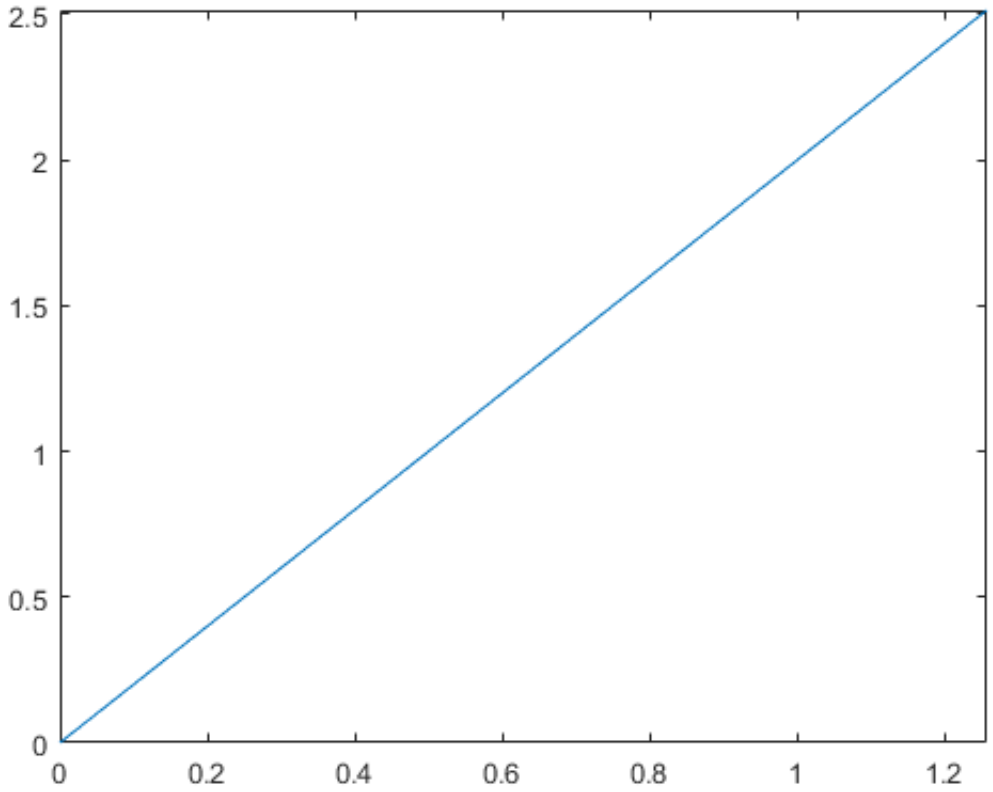
```
%Task 7:
syms x;
```

```
int(x*exp(2*x+1),-1,1)
```

```
ans =

(exp(-1)*(exp(4) + 3))/4
```

```
%Task 8:
syms t;
fplot(t/10,t/5,[0,4*pi])
```




```
%Task 9:
syms t;
r_t=[t^3,-exp(t),1]
v_t=int(r_t)
int(r_t,0,2)
```

```
r_t =

[ t^3, -exp(t), 1]
```

```
v_t =

[ t^4/4, -exp(t), t]


ans =

[ 4, 1 - exp(2), 2]
```

```
%Task 10:
P=[2,-1,3];
Q=[0,7,9];
R=[4,-9,-3];
S=[7,-6,-6];
dot(Q-P,S-R)
%Task 11:
P=[1,-2,3];
Q=[2,-1,3];
n=[2,2 3];
dot(Q-P,n)
```

```
ans =

     0


ans =

     4
```

```
%Task 12:
P=[5,0,2];
Q=[1,1,1];
R=[0,1,-2];
S=[1,-2,-1];
(abs(dot(S-R,cross(R-Q,P-Q))))/(norm(cross(R-Q,P-Q)))
```

```
ans =

    2.7085
```

```
%Task 13:
syms t;
assume(t, 'real');
r_t=[cos(t),cos(t),sqrt(2)*sin(t)]
```

```
v_t=diff(r_t);
T_t=simplify(v_t/norm(v_t))
N_t=simplify(diff(T_t)/norm(diff(T_t)))
```

```
r_t =

[ cos(t), cos(t), 2^(1/2)*sin(t)]

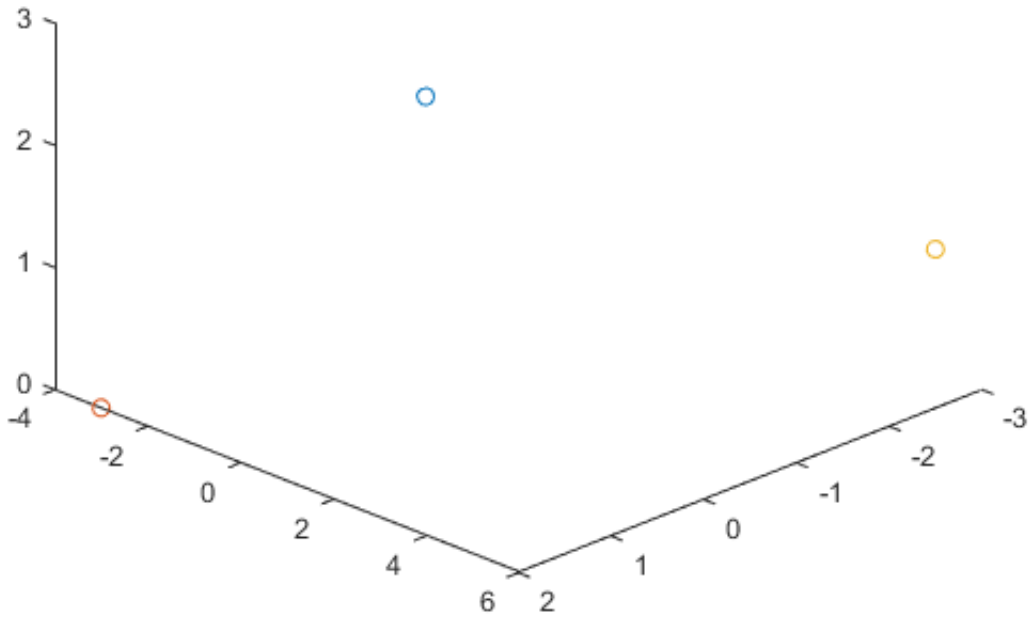

T_t =

[ -(2^(1/2)*sin(t))/2, -(2^(1/2)*sin(t))/2, cos(t)]


N_t =

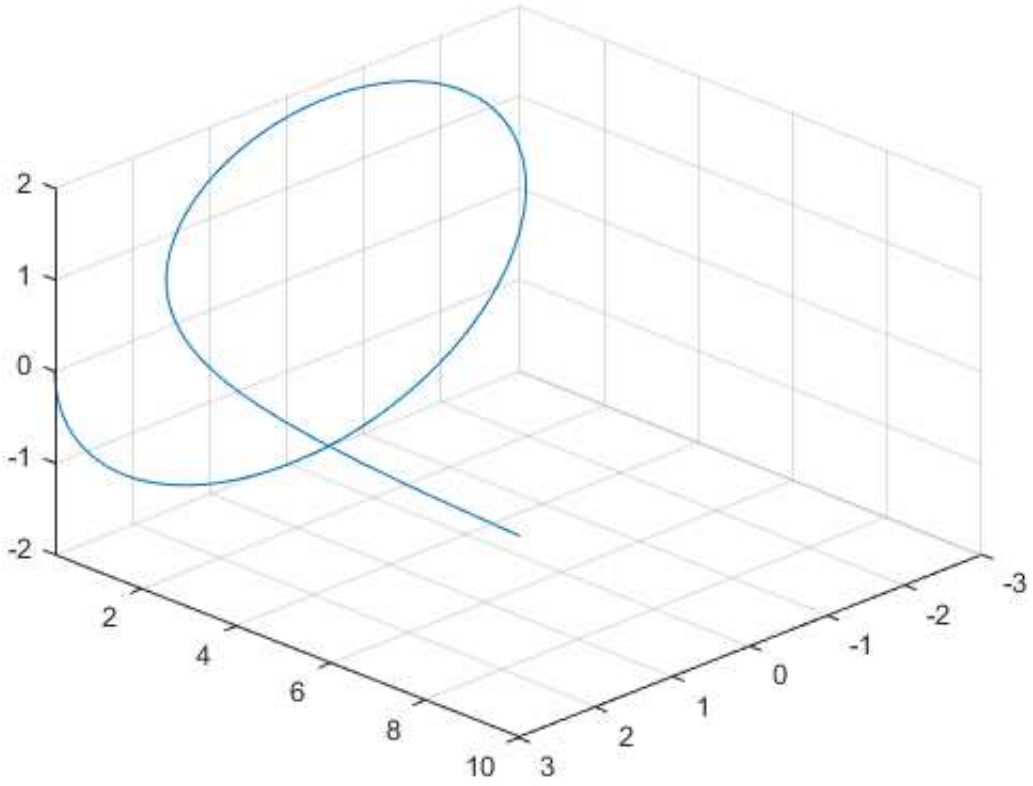
[ -(2^(1/2)*cos(t))/2, -(2^(1/2)*cos(t))/2, -sin(t)]
```

```
%Task 14:
plot3(1,2,3,'o',2,-3,0,'o',-3,5,1,'o')
view([10 10 10])
```

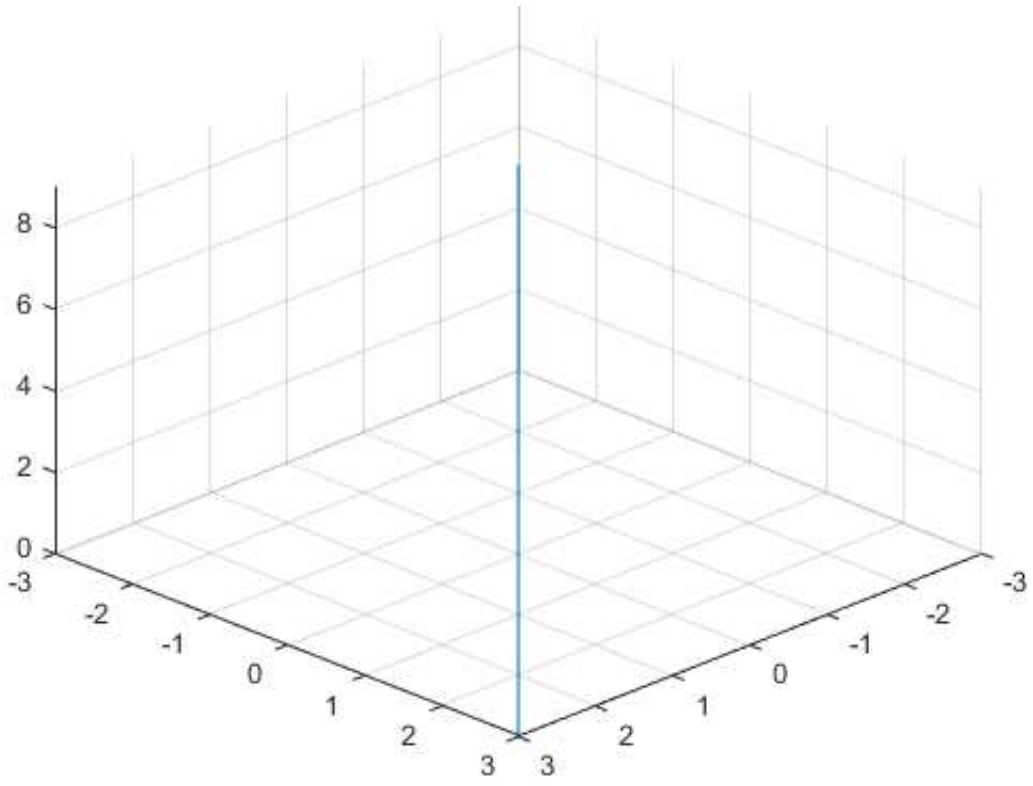



```
%Task 15:
```

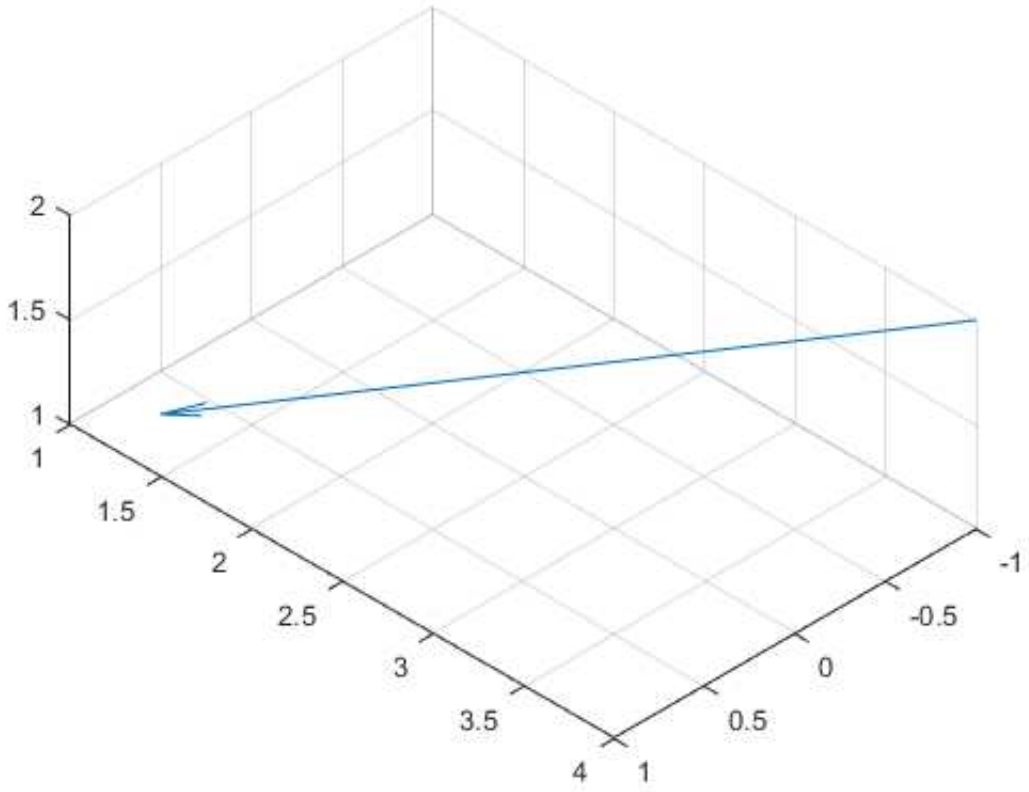
```
syms t;
fplot3(3*cos(t),1/t,2*sin(t),[0.1,2*pi])
view([10 10 10])
```



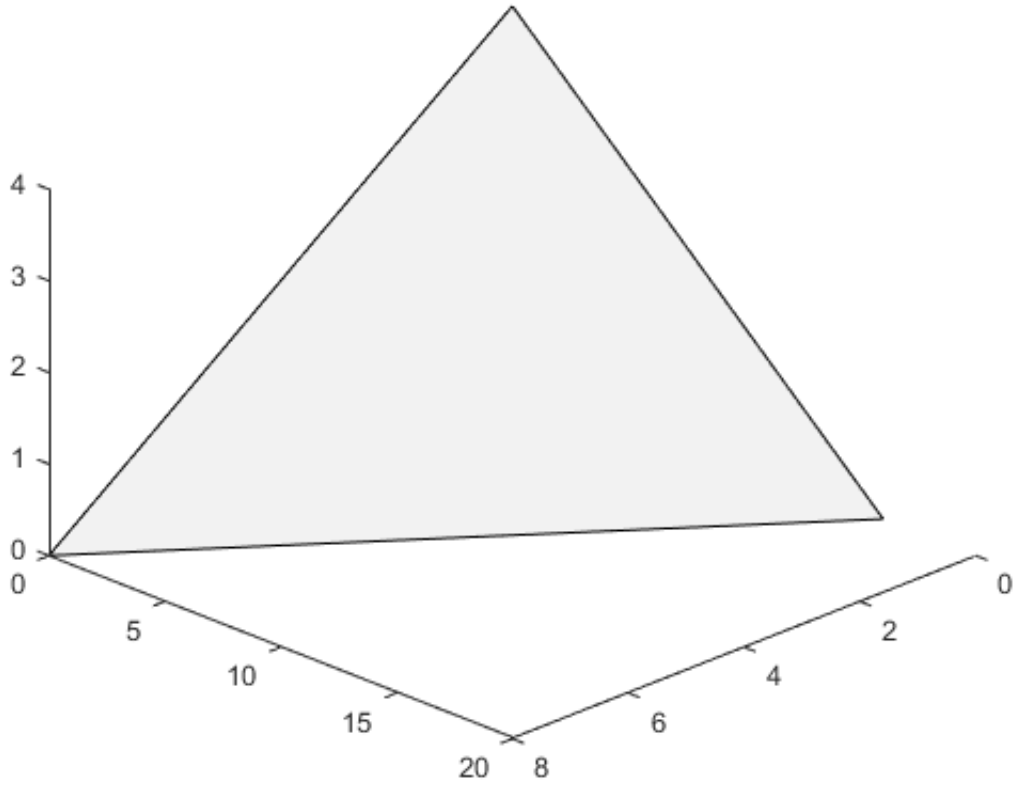

```
%Task 16:
syms t;
fplot3(t,t,9-t^2,[-3,3])
view([10 10 10])
```



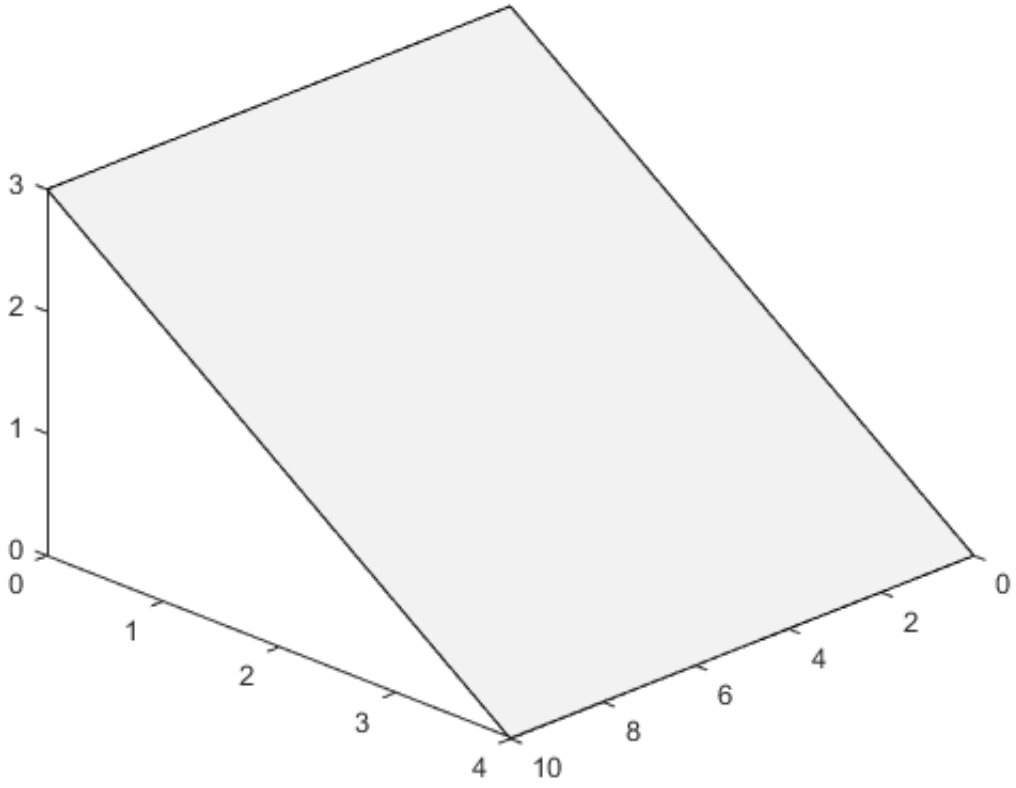

```
%Task 17:
quiver3(-1,4,2,2,-3,-1)
view([10 10 10])
daspect([1 1 1])
```



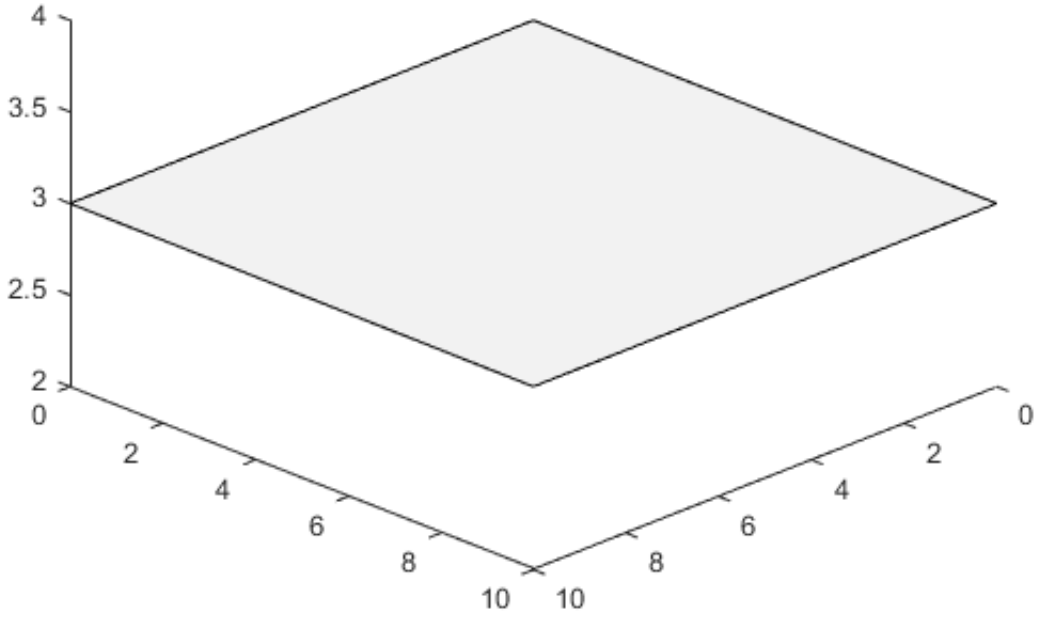

```
%Task 18:
figure
points = [8 0 0;0 16 0;0 0 4];
patch(points(:,1),points(:,2),points(:,3),[0.95 0.95 0.95]);
view([10 10 10])
```




```
%Task 19:
figure
points = [0 4 0;0 0 3;10 0 3;10 4 0];
patch(points(:,1),points(:,2),points(:,3),[0.95 0.95 0.95]);
view([10 10 10])
```




```
%Task 20:
figure
points = [0 0 3;0 10 3;10 10 3;10 0 3];
patch(points(:,1),points(:,2),points(:,3),[0.95 0.95 0.95]);
view([10 10 10])
```



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