

# How can I create 3D plots in R? Can you provide some examples?

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## RECOMMENDED CITATION

stats writer (2024). *How can I create 3D plots in R? Can you provide some examples?*.  
PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=142515>

Creating 3D plots in R allows for a more visually engaging representation of data, making it a useful tool for data analysis and presentation. To create 3D plots in R, the user can utilize the "scatterplot3d" package or the "rgl" package, both of which provide various options for customizing the plot. Some common types of 3D plots include scatter plots, surface plots, and wireframe plots. These plots can be generated by providing the appropriate data and using the corresponding functions in the packages mentioned. Examples of 3D plots include visualizing the relationship between three variables, analyzing the trend of data over time, or comparing multiple data sets. Overall, creating 3D plots in R allows for a more comprehensive understanding of data and can enhance the overall analysis process.

## Create 3D Plots in R (With Examples)

**The easiest way to create a 3D plot in R is to use the `persp()` function.**

**`persp(x, y, z)`**

**The following examples show how to use this function in practice.**

### Example 1: Basic 3D Plot

**The following code shows how to create a basic 3D plot:**

```
#define x and y  
x <- -10:10  
y <- -10:10
```

**#define function to create z-values**

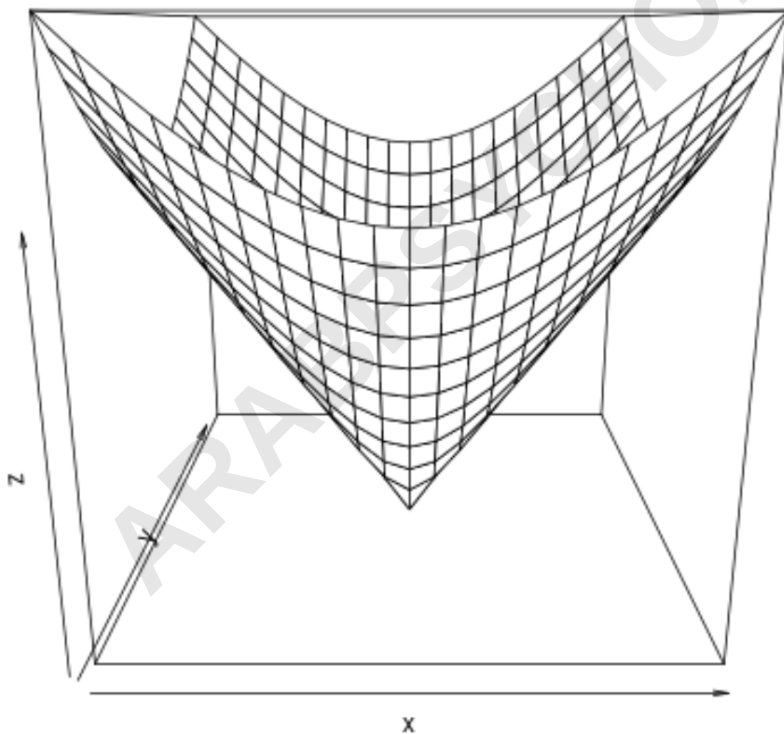
```
z_values <- function(x, y) {  
  sqrt(x ^ 2 + y ^ 2)  
}
```

**#create z-values**

```
z = outer(x, y, z_values)
```

**#create 3D plot**

```
persp(x, y, z)
```



## Example 2: Custom 3D Plot

The following code shows how to customize the axis labels, title, color, and shade of the plot:

```
#define x and y
```

```
x <- -10:10
```

```
y <- -10:10
```

```
#define function to create z-values
```

```
z_values <- function(x, y) {
```

```
  sqrt(x ^ 2 + y ^ 2)
```

```
}
```

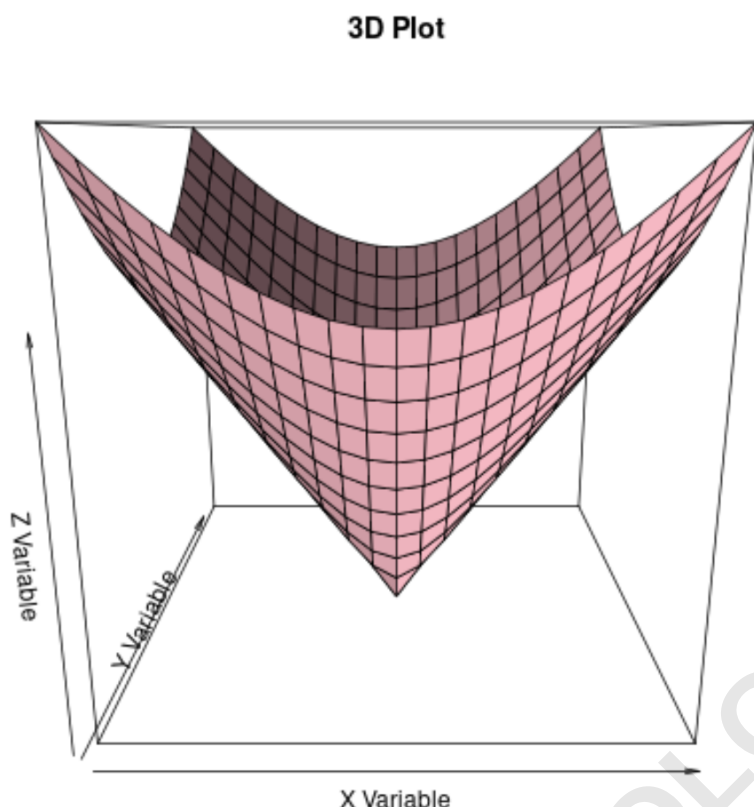
```
#create z-values
```

```
z = outer(x, y, z_values)
```

```
#create 3D plot
```

```
persp(x, y, z, xlab='X Variable', ylab='Y Variable', zlab='Z  
Variable',
```

```
main='3D Plot', col='pink', shade=.4)
```



### Example 3: Rotate the 3D Plot

The following code shows how to rotate the 3D plot to make it easier to view, using the theta and phi arguments:

```
#define x and y
```

```
x <- -10:10
```

```
y <- -10:10
```

```
#define function to create z-values
```

```
z_values <- function(x, y) {
```

```
  sqrt(x ^ 2 + y ^ 2)
```

```
}
```

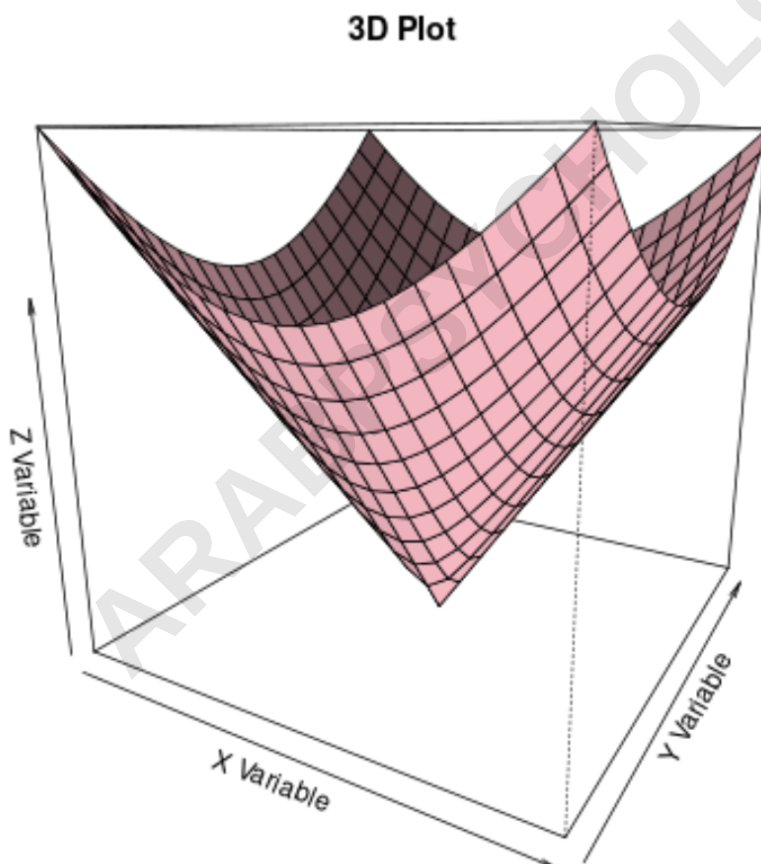
```
#create z-values
```

```
z = outer(x, y, z_values)
```

```
#create 3D plot
```

```
persp(x, y, z, xlab='X Variable', ylab='Y Variable', zlab='Z  
Variable',
```

```
main='3D Plot', col='pink', shade=.4, theta = 30, phi = 15)
```



### Example 4: Add Tick Marks to the 3D Plot

The following code shows how to use the `ticktype` argument to add tick marks with labels to each axis:

```
#define x and y
```

```
x <- -10:10
```

```
y <- -10:10
```

```
#define function to create z-values
```

```
z_values <- function(x, y) {
```

```
  sqrt(x ^ 2 + y ^ 2)
```

```
}
```

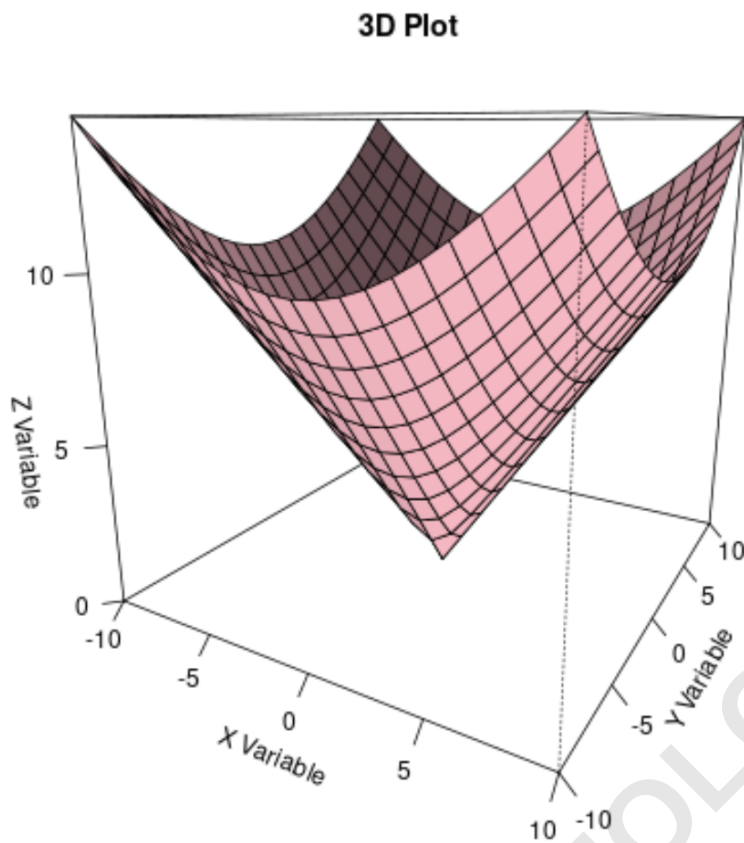
```
#create z-values
```

```
z = outer(x, y, z_values)
```

```
#create 3D plot
```

```
persp(x, y, z, xlab='X Variable', ylab='Y Variable', zlab='Z  
Variable',
```

```
main='3D Plot', col='pink', shade=.4, theta = 30, phi = 15,  
ticktype='detailed')
```



**The following tutorials explain how to create other common charts in R:**