

Answer on question 51410 Math

Solve the following equation:

$$\log_7(x-1)^2 - \log_7(x+1) - \log_7(49) = 0$$

Solution:

$$\log_7(x-1)^2 - \log_7(x+1) = \log_7(49) \rightarrow \log_7\left(\frac{(x-1)^2}{(x+1)}\right) = \log_7(49)$$

$$\frac{(x-1)^2}{(x+1)} = 49 \rightarrow (x-1)^2 = 49(x+1)$$

$$x^2 - 51x - 6 = 0 \rightarrow D = (51^2 + 4 \cdot 6) \rightarrow x_1 = \frac{51 + \sqrt{D}}{2} \text{ and } x_2 = \frac{51 - \sqrt{D}}{2}$$

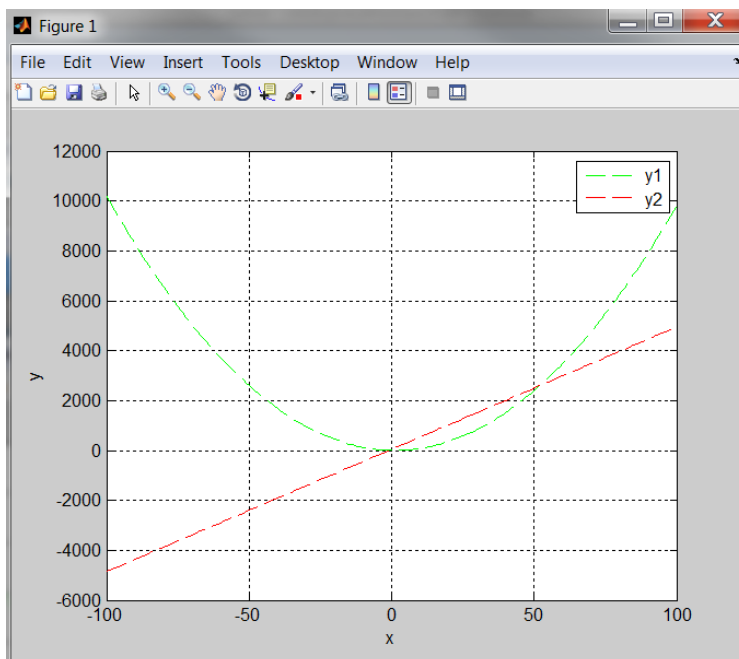
Answer:

$$x_1 = 51.1174$$

$$x_2 = -0.1174$$

Graph Solution:

$$Y_1 = (x-1)^2 \quad Y_2 = 49(x+1)$$



MATLAB CODE

```
clc,close all,clear all
p = [1 -51 -6]
r =roots(p)
x=-100:100
y1 = (x-1).^2;
y2= 49*(x+1);
plot(x,y1,'g--',x,y2,'r--'),grid on
xlabel('x')
ylabel('y')
legend('y1','y2')
```