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# PDF of 2 hypothesis; One without the target and other with the target

```
x = -10:0.001:10; % window for the normal distributon without the
    target
nu = 4;           % degrees of freedom for the chi squared
    distribution in the case of target present
x_c = 0:0.001:30; % window for chi squared distribution (because this
    distribution always starts from 0)

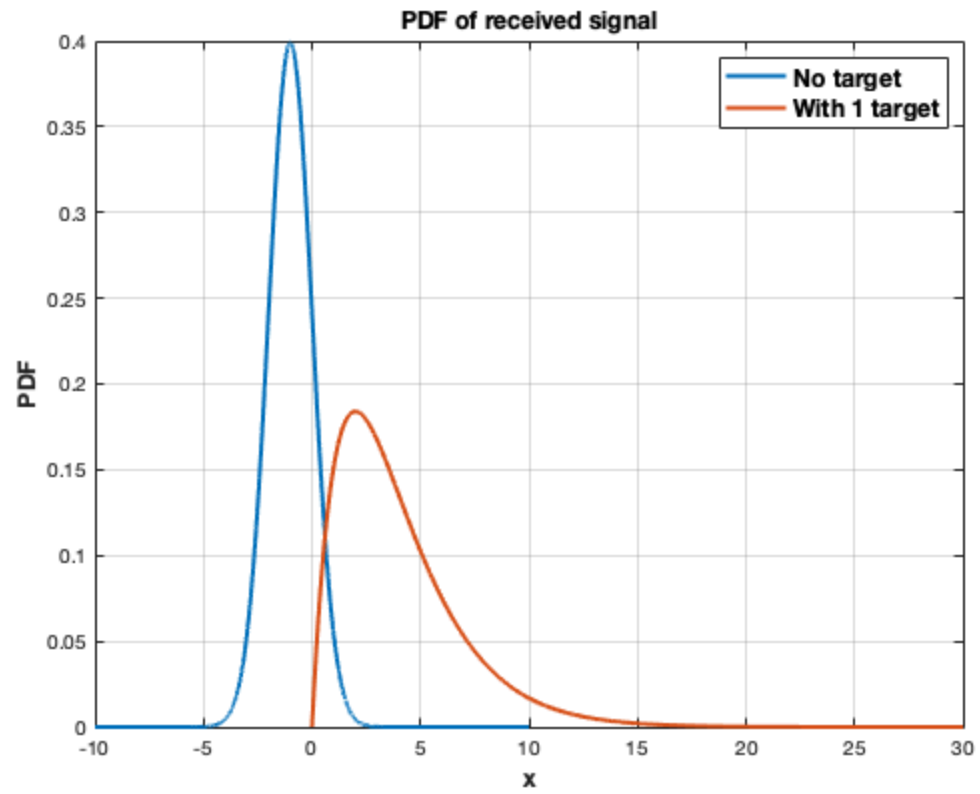
pd = makedist('Normal','mu',-1,'sigma',1); %Normal distribution object

pdf_norm = pdf(pd, x);           %PDF of Normal distribution
pdf_chi = chi2pdf(x_c, nu);      %PDF of Chi Squared
    distribution

plot(x, pdf_norm, 'LineWidth', 2); %Plot of Normal
    distribution
grid on;
hold on;

plot(x_c, pdf_chi, 'LineWidth', 2); %Plot of Chi squared
    distribution

xlabel('x', 'FontSize', 12, 'FontWeight', 'bold');
ylabel('PDF', 'FontSize', 12, 'FontWeight', 'bold');
title('PDF of received signal', 'FontSize', 12, 'FontWeight', 'bold');
legend({'No target', 'With 1
    target'}, 'Location', 'northeast', 'FontSize',
    12, 'FontWeight', 'bold');
```



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