box for importing packages

In [4]:
```
# using DataFrames
using StatsBase
using PyPlot
using Distributions
# using DelimitedFiles
using HypothesisTests
```

try using inbuild test

In [5]:
```
OneSampleZTest(72, 7, 30, 75)
```

Out[5]:
```
One sample z-test
-----------------
Population details:
    parameter of interest:   Mean
    value under h_0:         75
    point estimate:          72
    95% confidence interval: (69.4951, 74.5049)

Test summary:
    outcome with 95% confidence: reject h_0
    two-sided p-value:           0.0189

Details:
    number of observations:   30
    z-statistic:              -2.347382389307855
    population standard error: 1.2780193008453875
```

setting up own test

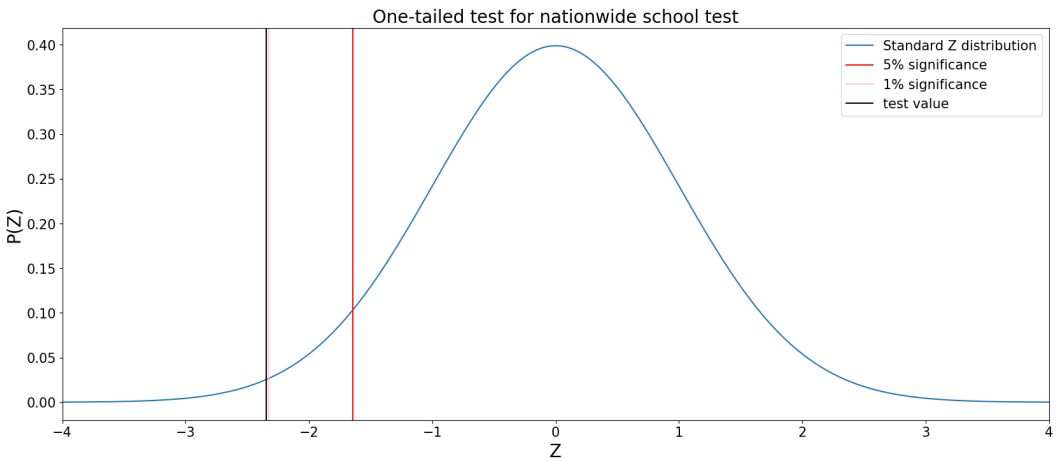
In [7]:
```
mu0 = 75
std0 = 7
xbar = 72
n = 30
#need 1 sided test

zscore = (xbar - mu0) / (std0 / sqrt(n))
p = cdf(Normal(), zscore)

sig5 = invlogcdf(Normal(), log(0.05))
sig1 = invlogcdf(Normal(), log(0.01))
test = invlogcdf(Normal(), log(p))

figure(figsize = (20, 8))
title("One-tailed test for nationwide school test", fontsize = 20)
x = -5:0.05:5
y1 = pdf.(Normal(), x)
plot(x, y1, label = "Standard Z distribution")
axvline(sig5, label = "5% significance", c = "red")
axvline(sig1, label = "1% significance", c = "pink")
axvline(test, c = "0", label = "test value")
legend(fontsize = 15)
xlim((-4, 4))
xlabel("Z", fontsize = 20)
ylabel("P(Z)", fontsize = 20)
xticks(fontsize = 15)
yticks(fontsize = 15)

println("p = ", p)
println("z = ", zscore)
```




```
p = 0.009452920389165925
z = -2.347382389307855
```