In [1]:
```
import numpy as np
import matplotlib.pyplot as plt
```

In [2]:
```
def bound(rho, n):
    return 2*np.exp(rho)/((rho - 1) * rho**n)
```

In [ ]:
```
size = int(10)
maxsize = int(25)
xs = np.linspace(1+1e-4, maxsize, 10000)
mins_rho = np.zeros(size)
mins_val = np.zeros(size)
for n in range(size):
    mins_rho[n] = xs[np.argmin(bound(xs, n))]
    mins_val[n] = np.min(bound(xs, n))

rho_min = np.diff(mins_rho)/np.diff((range(1, n+2)))
fig, axs = plt.subplots(1, 2, figsize = (16, 8))
axs[0].plot(range(size), mins_rho)

axs[1].plot(range(size-1), rho_min)
#axs.set_yscale('log')
axs[0].grid(True)
axs[1].grid(True)
axs[0].set_ylabel(r"Minimum $\rho$")
axs[0].set_title(r"Minimum $\rho$ Corresponding to Given $n$.")
axs[0].set_xlabel("$n$")
axs[1].set_title("Bound Value's First Derivative")
axs[1].set_ylabel("Value")
axs[1].set_xlabel("$n$")

plt.show()
```