1. You would have to dig a little over 2 meters down, to about 2.2 meters, to escape the temperature fluctuations at the surface of Mars.
2. The graph shows that the analytical(exact) solution lags slightly behind the numerical solution for the first few timesteps then aligns very closely.
3. You would not have to dig much deeper to escape 80 degree fluctuations than you would for 50 degree fluctuations. Both solutions rapidly approach 0, so the difference is negligible.

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