
The equation

$$e^x = 2x^2 \tag{1}$$

has three solutions on the interval $-2 \le x \le 3$.

1. To see this, plot functions e^x and $2x^2$ on a common plot in Maple on the above interval. Make the curves respectively red and blue, give them a thickness of 4 or 5, and make the plot size 300×300 pixels. Clearly the two functions intersect at three points.
2. Now express Eq. (1) in **zero form** ($f(x) = 0$) by subtracting everything to the LHS. Plot the function $f(x)$ on the interval $-2 \le x \le 3$. Make this curve blue with an appropriate thickness and make the plot size 300×300 pixels. Clearly function $f(x)$ has three zeros (x intercepts).
3. Notice that $f(x)$ has two critical points. What did we say about critical points when using Newton's method?
4. Using $x_0 = -1.0$, apply 6 iterations of Newton's method to approximate the solution near $x = -0.5$.
5. Using $x_0 = 1.2$, apply 6 iterations of Newton's method to approximate the solution near $x = 1.5$.
6. Using $x_0 = 3.0$, apply 6 iterations of Newton's method to approximate the solution near $x = 2.5$.