CALCULUS

Newton's method

NEW

0530-1. NEW We wish to solve $x^5 - 5x^3 + 8 = 0$. Starting with an initial guess of $x_1 = 2$, compute the next two guesses, x_2 and x_3, to at least four decimals, using Newton's method.

0530-2. NEW We wish to solve $x^5 - 5x^3 - 12 = 0$. Starting with an initial guess of $x_1 = 2$, compute the next two guesses, x_2 and x_3, to at least four decimals, using Newton's method.

0530-3. NEW We wish to solve $x^5 - 4 = 0$. Starting with an initial guess of $x_1 = 1$, compute the next two guesses, x_2 and x_3, to at least four decimals, using Newton's method.

0530-4. NEW We wish to solve $x^5 + 2x^3 + 3 = 0$. Starting with an initial guess of $x_1 = -1$, compute the next two guesses, x_2 and x_3, to at least four decimals, using Newton's method.

0530-5. NEW We wish to solve $x^3 - 8 = 0$. Starting with an initial guess of $x_1 = -1$, compute the next two guesses, x_2 and x_3, to at least four decimals, using Newton's method.

0530-6. NEW Using Newton's method, calculate $\sqrt[3]{6}$, to five decimal places.

0530-7. NEW Find the unique solution to $3x = \cos x$, to five decimal places.

0530-8. NEW Find a solution to $3x^{5/3} + x = -2$, to five decimal places, by applying Newton's method to $f(x) = 3x^{5/3} + x + 2$, with $x_1 = 1.5$.

0530-9. NEW We wish to solve $t + \sqrt[3]{t} = 0$. Let $t_1 := \frac{1}{3\sqrt{3}}$. Starting with this initial guess t_1, compute the next six guesses, $t_2, \ldots, t_7$, using Newton's method. Draw a picture, to illustrate what is happening.