

$$y = x^2 - 13$$

$$y' = 2x$$

Use Newton's Method to estimate $\sqrt{13}$. First identify a function that has a zero of $\sqrt{13}$, and apply Newton's method to that function. Use $X_0 = 4$. Give each of the values below to 6 significant digits.

$$X_1 = 3.625$$

$$X_2 = 3.605603$$

$$X_3 = 3.605551$$

Use Newton's Method to find the coordinates of the point of intersection of the functions $f(x) = \sin(x)$ and $h(x) = 0.5x - 1$. (In other words, solve the equation: $\sin(x) = 0.5x - 1$.) Use $x_0 = 3$ as an initial guess. List the next 3 guesses to 6 decimal places.

$$x_0 = 3.0$$

$$x_1 = \underline{2.759139}$$

$$x_2 = \underline{2.754676}$$

$$x_3 = \underline{2.754673}$$

$$y = \sin x - (0.5x - 1) = \sin x - 0.5x + 1$$

$$y' = \cos x - 0.5$$