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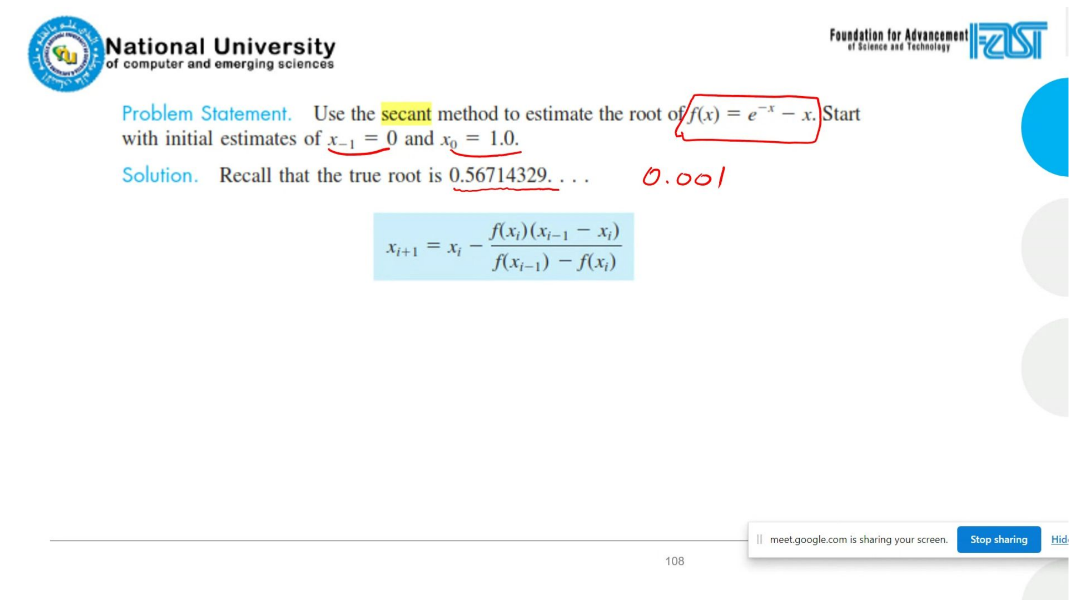
# Meet - tqf-fxqk-pzw

Generated on February 6, 2024

## Summary

| Notes | Screenshots | Bookmarks |
|---|---|---|
| 1 | 15 | 2 |




Usama Antuley discusses the impact of tolerance structures with minimal variation on individuals.

10:18 AM

We stop on 2 values

xi represents xo

xi=xo=1

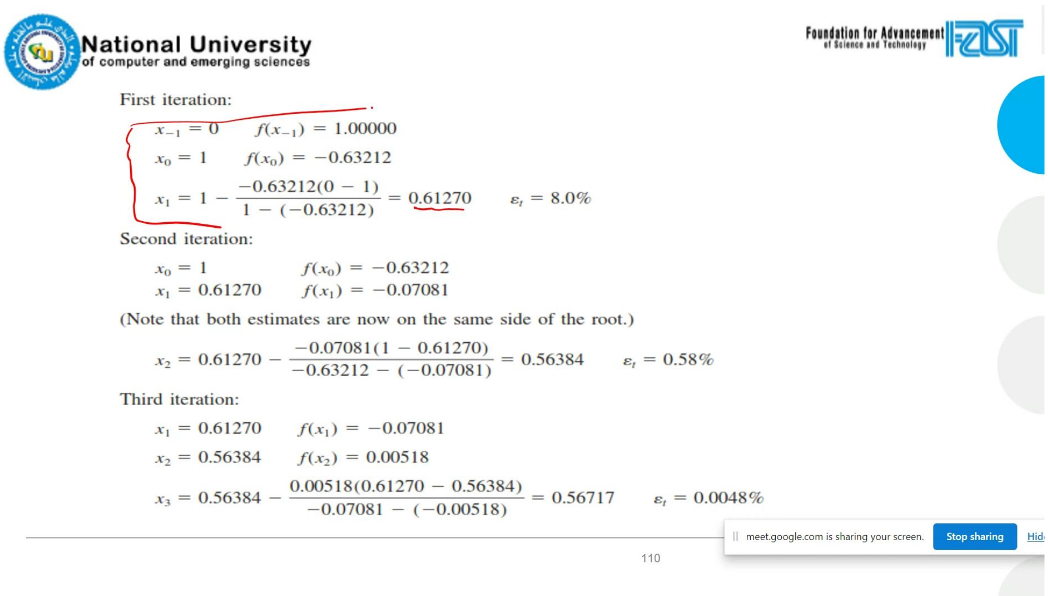
f(1)= 1/e -1

f(1)=-0.632….

x-1=0

f(0)=1

▷ 10:18 AM




First iteration:

$x_{-1} = 0 \qquad f(x_{-1}) = 1.00000$

$x_0 = 1 \qquad f(x_0) = -0.63212$

$$x_1 = 1 - \frac{-0.63212(0-1)}{1-(-0.63212)} = 0.61270 \qquad \varepsilon_t = 8.0\%$$

Second iteration:

$x_0 = 1 \qquad f(x_0) = -0.63212$

$x_1 = 0.61270 \qquad f(x_1) = -0.07081$

(Note that both estimates are now on the same side of the root.)

$$x_2 = 0.61270 - \frac{-0.07081(1-0.61270)}{-0.63212-(-0.07081)} = 0.56384 \qquad \varepsilon_t = 0.58\%$$

Third iteration:

$x_1 = 0.61270 \qquad f(x_1) = -0.07081$

$x_2 = 0.56384 \qquad f(x_2) = 0.00518$

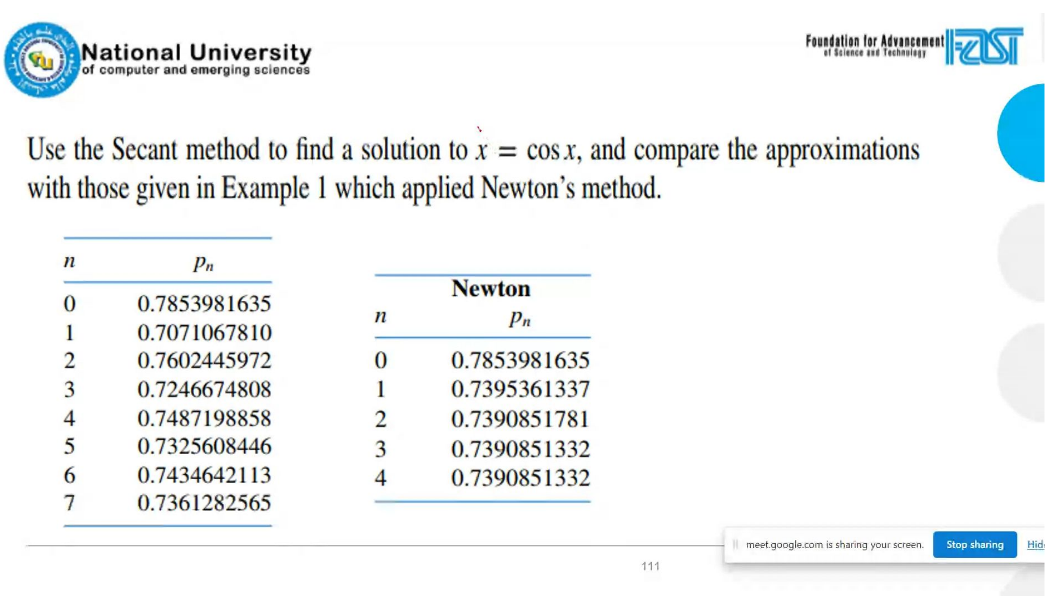
$$x_3 = 0.56384 - \frac{0.00518(0.61270-0.56384)}{-0.07081-(-0.00518)} = 0.56717 \qquad \varepsilon_t = 0.0048\%$$



Similarity after 2 decimal places

Usama Antuley discusses the potential impact of Next Generation technology on performance and value.

▷ 10:24 AM




Use the Secant method to find a solution to $x = \cos x$, and compare the approximations with those given in Example 1 which applied Newton's method.

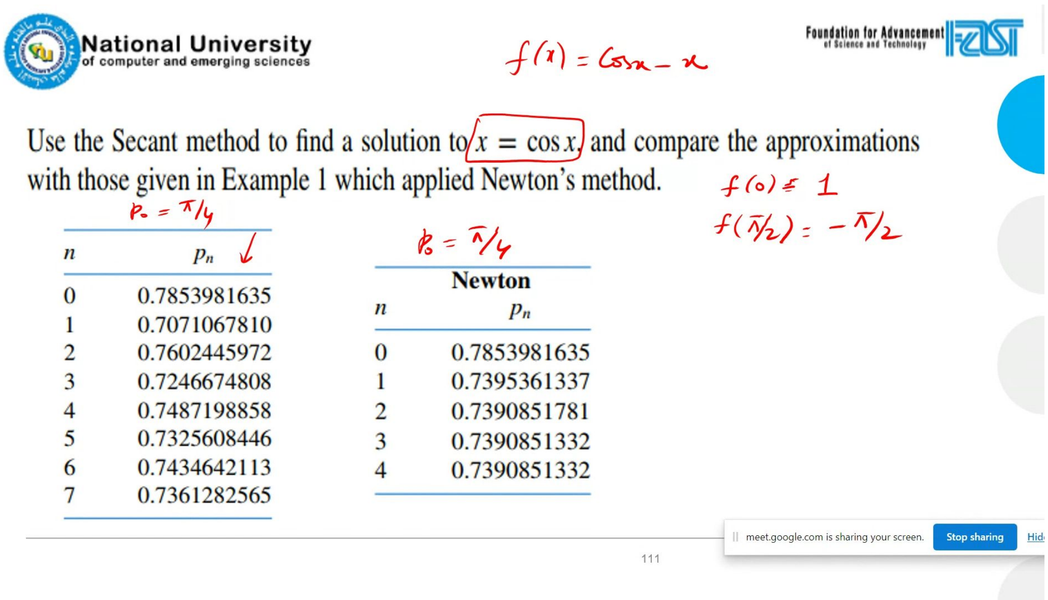
| $n$ | $p_n$ |
|---|---|
| 0 | 0.7853981635 |
| 1 | 0.7071067810 |
| 2 | 0.7602445972 |
| 3 | 0.7246674808 |
| 4 | 0.7487198858 |
| 5 | 0.7325608446 |
| 6 | 0.7434642113 |
| 7 | 0.7361282565 |

| Newton | |
|---|---|
| $n$ | $p_n$ |
| 0 | 0.7853981635 |
| 1 | 0.7395361337 |
| 2 | 0.7390851781 |
| 3 | 0.7390851332 |
| 4 | 0.7390851332 |



Usama Antuley explains the iterative process of finding the capitated value X in a mathematical function.

▷ 10:25 AM



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FAST

$f(x) = \cos x - x$

Use the Secant method to find a solution to $\boxed{x = \cos x}$ and compare the approximations with those given in Example 1 which applied Newton's method.

$f(0) = 1$

$f(\pi/2) = -\pi/2$

$p_0 = \pi/4$

| $n$ | $p_n$ |
|---|---|
| 0 | 0.7853981635 |
| 1 | 0.7071067810 |
| 2 | 0.7602445972 |
| 3 | 0.7246674808 |
| 4 | 0.7487198858 |
| 5 | 0.7325608446 |
| 6 | 0.7434642113 |
| 7 | 0.7361282565 |

$p_0 = \pi/4$

| Newton | |
|---|---|
| $n$ | $p_n$ |
| 0 | 0.7853981635 |
| 1 | 0.7395361337 |
| 2 | 0.7390851781 |
| 3 | 0.7390851332 |
| 4 | 0.7390851332 |

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Usama Antuley discusses the process of solving container X using mathematical functions and iterations.

▷ 10:26 AM

Usama Antuley discusses the application of the secant method in mathematical functions and its convergence.

▷ 10:26 AM

▷ 10:26 AM

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Use the Secant method to find a solution to $x = \cos x$, and compare the approximations with those given in Example 1 which applied Newton's method.

$x_i = B = \pi/4$ ⓪

$x_{i-1} = A = 0.5$ $\frac{\pi}{2}$

$$x_{i+1} = x_i - \frac{f(x_i)(x_{i-1} - x_i)}{f(x_{i-1}) - f(x_i)} = B -$$

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Usama Antuley discusses the application of a formula for computing hydration in a recent study.

10:28 AM

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Use the Secant method to find a solution to $x = \cos x$, and compare the approximations with those given in Example 1 which applied Newton's method.

$x_i = B = \pi/4$ ⓪

$x_{i-1} = A = 0.5$ $\frac{\pi}{2}$

$$x_{i+1} = x_i - \frac{f(x_i)(x_{i-1} - x_i)}{f(x_{i-1}) - f(x_i)} = B - \frac{(\cos B - B)\,(A - B)}{(\cos A - A) - (\cos B - B)}$$

$x_{i-}$

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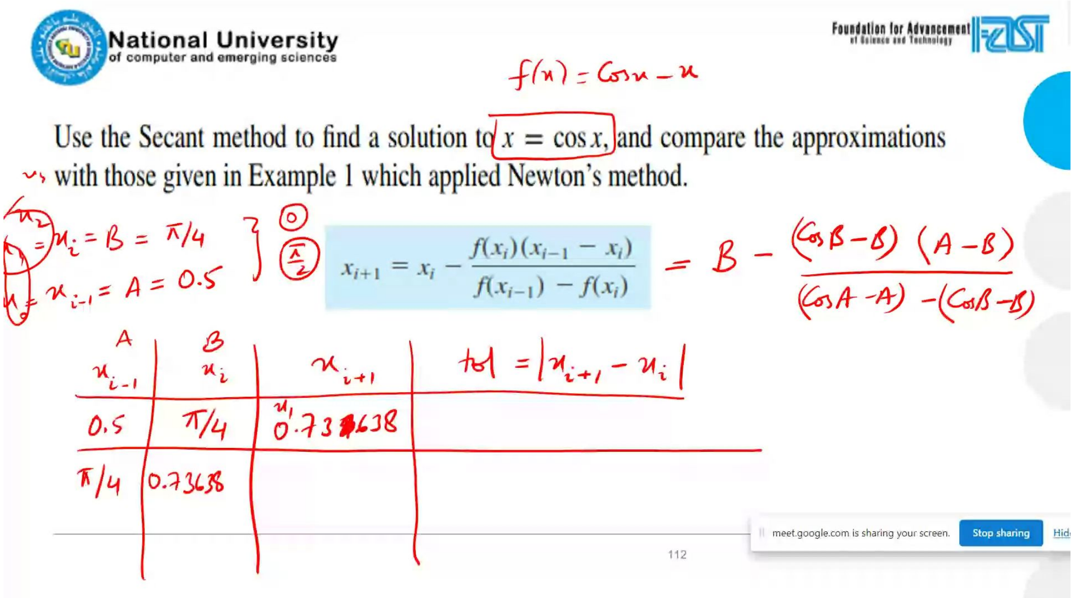
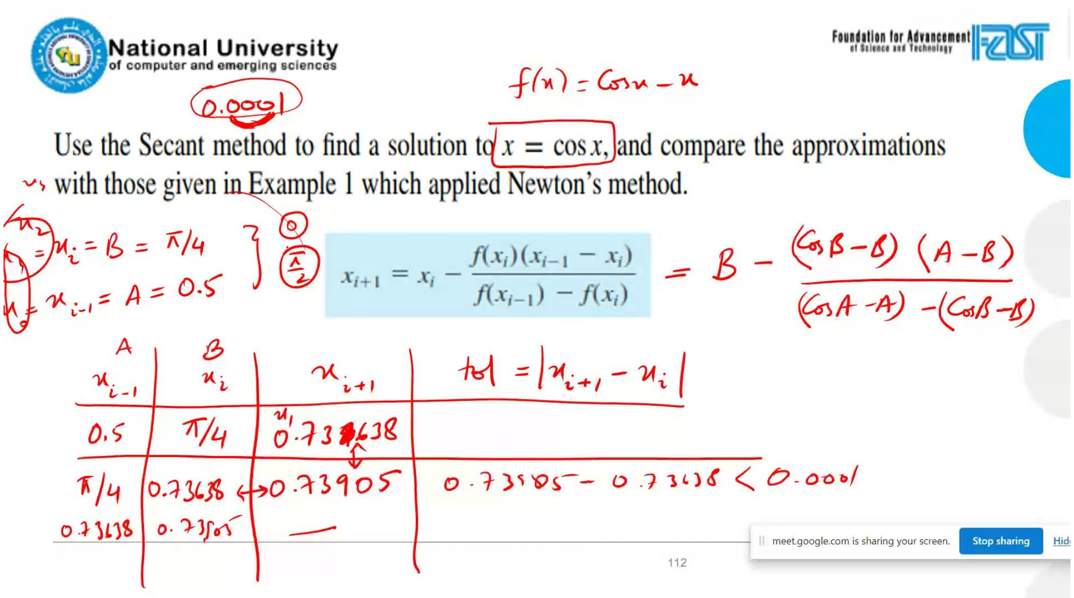
Usama Antuley discusses the concept of gain between root for the secant method in mathematical analysis.

10:29 AM




Usama Antuley discusses the updated points and computations for a Casio excitation in his latest findings.

▷ 10:32 AM




The convergence rate of the point iteration method was discussed with a focus on achieving a tolerance of 0.001 in a recent seminar.

▷ 10:36 AM

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$f(x) = \cos x - x \quad f(x) = 0$

$f[a, b]$

Use the Secant method to find a solution to $\boxed{x = \cos x}$, and compare the approximations with those given in Example 1 which applied Newton's method.

$f(0) = 1$ +ve

$f(\pi/2) = -\pi/2$

$P_0 = 0.5$

$P_1 = \pi/4$

$P_0 = \pi/4$

| $n$ | $p_n$ |
|---|---|
| 0 | 0.7853981635 |
| 1 | 0.7071067810 |
| 2 | 0.7602445972 |
| 3 | 0.7246674808 |
| 4 | 0.7487198858 |
| 5 | 0.7325608446 |
| 6 | 0.7434642113 |
| 7 | 0.7361282565 |

$P_0 = \pi/4$

| | Newton |
|---|---|
| $n$ | $p_n$ |
| 0 | 0.7853981635 |
| 1 | 0.7395361337 |
| 2 | 0.7390851781 |
| 3 | 0.7390851332 |
| 4 | 0.7390851332 |

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Usama Antuley discusses the continuous functional and bounded values of a function in his latest theorem.

10:39 AM

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# Root Finding Methods:

- *Bracketing methods*. As the name implies, these are based on two initial guesses that "bracket" the root—that is, are on either side of the root.
- *Open methods*. These methods can involve one or more initial guesses, but there is no need for them to bracket the root.

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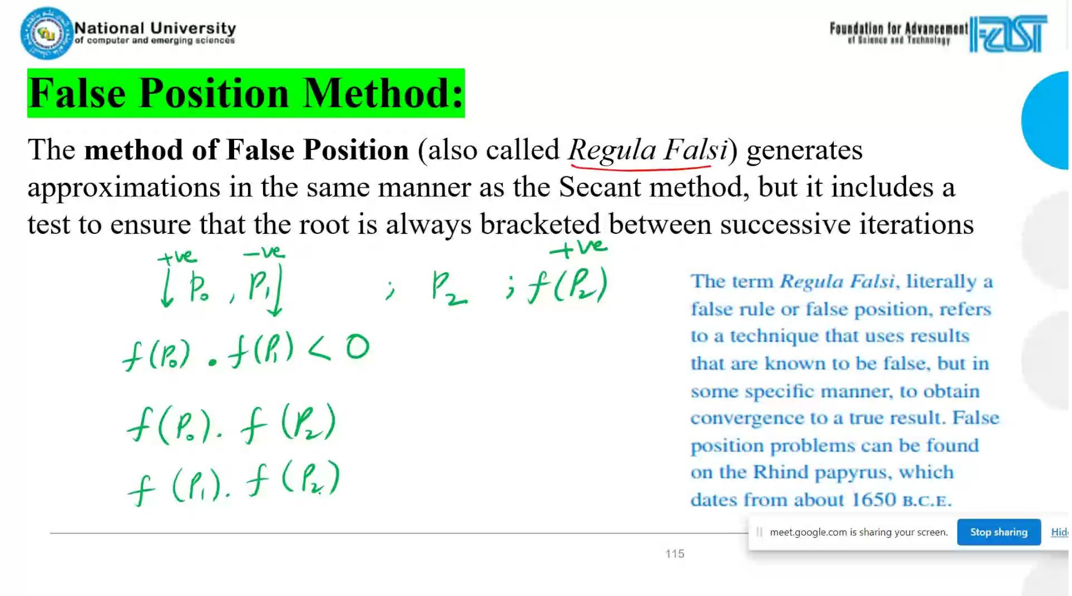
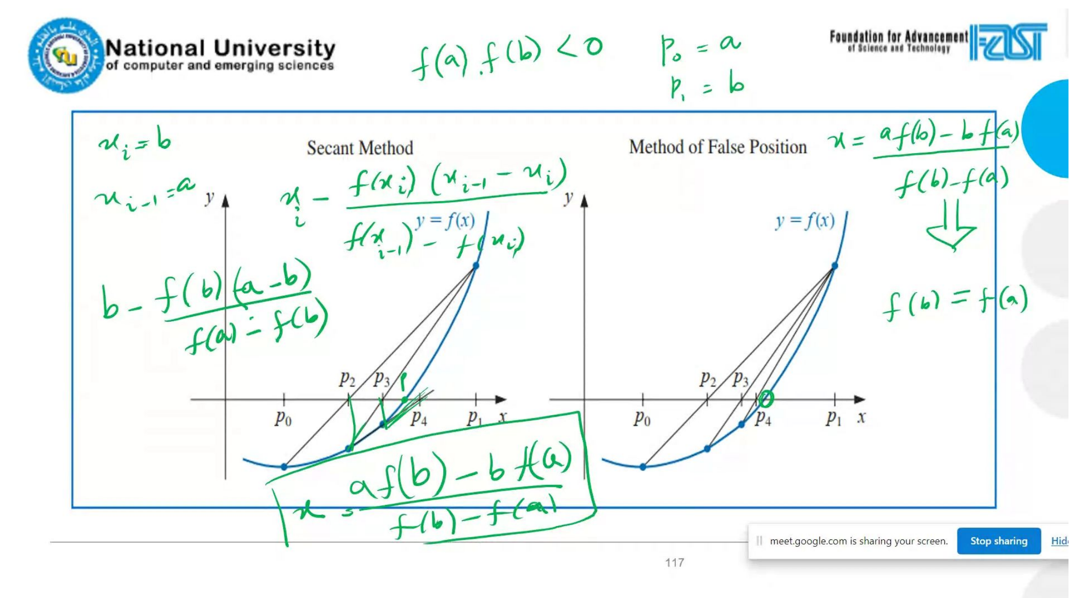
10:39 AM




Usama Antuley discusses the impact of product profiles and negative Google ratings on businesses in Nova, Wisconsin.

10:44 AM




Usama Antuley discusses a formula for calculating false position in his latest research.

10:47 AM

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## Example: Find the solution $x = \cos x$

$x = \dfrac{a f(b) - b f(a)}{f(b) - f(a)}$

***Solution*** To make a reasonable comparison we will use the same initial approximations as in the Secant method, that is, $p_0 = 0.5$ and $p_1 = \pi/4$. Table 2.6 shows the results of the method of False Position applied to $f(x) = \cos x - x$ together with those we obtained using the Secant and Newton's methods. Notice that the False Position and Secant approximations agree through $p_3$ and that the method of False Position requires an additional iteration to obtain the same accuracy as the Secant method. ■

$A = a = P_0 = 0.5$ ; $P_1 = \pi/4 = b = B$

| a | b | f(a) | f(b) |
|---|---|---|---|
| 0.5 | $\pi/4$ | +ve | -ve |

| | False Position | Secant | Newton |
|---|---|---|---|
| $n$ | $p_n$ | $p_n$ | $p_n$ |
| 0 | 0.5 | 0.5 | 0.7853981635 |
| 1 | 0.7853981635 | 0.7853981635 | 0.7395361337 |
| 2 | 0.7363841388 | 0.7363841388 | 0.7390851781 |
| 3 | 0.7390581392 | 0.7390581392 | 0.7390851332 |
| 4 | 0.7390848638 | 0.7390851493 | 0.7390851332 |
| 5 | 0.7390851305 | 0.7390851332 | |
| 6 | 0.7390851332 | | |

$$\frac{A(\cos B - B) - B(\cos A - A)}{(\cos B - B) - (\cos A - A)}$$

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Usama Antuley discusses the calculation and formulation of a new root form in an incredible automation function.

10:50 AM

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Example: Find the solution $x = \cos x$

$x = \dfrac{a f(b) - b f(a)}{f(b) - f(a)}$

Solution To make a reasonable comparison we will use the same initial approximations as in the Secant method, that is, $p_0 = 0.5$ and $p_1 = \pi/4$. Table 2.6 shows the results of the method of False Position applied to $f(x) = \cos x - x$ together with those we obtained using the Secant and Newton's methods. Notice that the False Position and Secant approximations agree through $p_3$ and that the method of False Position requires an additional iteration to obtain the same accuracy as the Secant method. ■

$A = a = P_0 = 0.5$ ; $P_1 = \pi/4 = b = B$

| a | b | f(a) | f(b) |
|---|---|---|---|
| 0.5 | $\pi/4$ | +ve | -ve |

| | False Position | Secant | Newton |
|---|---|---|---|
| $n$ | $p_n$ | $p_n$ | $p_n$ |
| 0 | 0.5 | 0.5 | 0.7853981635 |
| 1 | 0.7853981635 | 0.7853981635 | 0.7395361337 |
| 2 | 0.7363841388 | 0.7363841388 | 0.7390851781 |
| 3 | 0.7390581392 | 0.7390581392 | 0.7390851332 |
| 4 | 0.7390848638 | 0.7390851493 | 0.7390851332 |
| 5 | 0.7390851305 | 0.7390851332 | |
| 6 | 0.7390851332 | | |

$$\frac{A(\cos B - B) - B(\cos A - A)}{(\cos B - B) - (\cos A - A)}$$

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10:50 AM

# Example: Find the solution $x = cosx$

$x = \frac{a\,f(b) - b\,f(a)}{f(b) - f(a)}$

**Solution** To make a reasonable comparison we will use the same initial approximations as in the Secant method, that is, $p_0 = 0.5$ and $p_1 = \pi/4$. Table 2.6 shows the results of the method of False Position applied to $f(x) = \cos x - x$ together with those we obtained using the Secant and Newton's methods. Notice that the False Position and Secant approximations agree through $p_3$ and that the method of False Position requires an additional iteration to obtain the same accuracy as the Secant method. ■

$A = a = P_0 = 0.5$, $P_1 = \pi/4 = b = B$

| +ve a | -ve b | f(a) | f(b) | c | f(c) |
|---|---|---|---|---|---|
| 0.5 | π/4 | +ve | -ve | 0.73638 | |
| 0.73638 | π/4 | | | | |

| | False Position | Secant | Newton |
|---|---|---|---|
| $n$ | $p_n$ | $p_n$ | $p_n$ |
| 0 | 0.5 | 0.5 | 0.7853981635 |
| 1 | 0.7853981635 | 0.7853981635 | 0.7395361337 |
| 2 | $\boxed{0.7363841388}$ | 0.7363841388 | 0.7390851781 |
| 3 | 0.7390581392 | 0.7390581392 | 0.7390851332 |
| 4 | 0.7390848638 | 0.7390851493 | 0.7390851332 |
| 5 | 0.7390851305 | 0.7390851332 | |
| 6 | 0.7390851332 | | |

$$\frac{A(\cos B - B) - B(\cos A - A)}{(\cos B - B) - (\cos A - A)}$$





Function keys have both positive and negative values, with the positive pair being attributed to Rehan by Usama Antuley.

10:52 AM