1. $f(x) = x^3 - 5x + 1$, $x_1 = 2$

NEWTON'S METHOD

(1) DETERMINE GUESS (x_1)

$x_1 = 2$

(2) FIND DERIVATIVE

$f'(x) = 3x^2 - 5$

(3) FIND $x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$

$n=1$ $x_{1+1} = x_1 - \frac{f(x_1)}{f'(x_1)}$

$x_2 = 2 - \frac{f(2)}{f'(2)}$

$x_2 = 2 - \frac{(2)^3 - 5(2) + 1}{3(2)^2 - 5}$

$= 2 - \frac{8 - 10 + 1}{12 - 5}$

$= 2 - \frac{-1}{7}$

$= 2 + \frac{1}{7}$

$x_2 = 2.14286$

$n=2$ $x_{2+1} = x_2 - \frac{f(x_2)}{f'(x_2)}$

$x_3 = 2.14286 - \frac{f(2.14286)}{f'(2.14286)}$

$x_3 = 2.14286 - \frac{(2.14286)^3 - 5(2.14286) + 1}{3(2.14286)^2 - 5}$

$x_3 = 2.12857$

(4) REPEAT STEP (3) UNTIL DONE

1. $f(x) = x^3 - 5x + 1$

$f'(x) = 3x^2 - 5$

$x_1 = ?$

$x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$

$NEWX = X - \frac{f(x)}{f'(x)}$

$NEWX = X - \frac{x^3 - 5x + 1}{3x^2 - 5}$