

NAME - ARYAN SINGH RAJAWAT

SUB - Numerical Methods & Algebra

Roll No - 27

DATE - 6/4/21

Q11 $F(x) = x^2 - 3$

Clearly $F(1) = -2$ $F(2) = 1$

$$n \quad a(n) \quad b(n) \quad x = \frac{a+b}{2} \quad f(x)$$

1 1 2 $3/2$ $-3/4$

2 1.5 2 $7/4$ 0.625

3 1.5 $7/4$ 1.625 -0.359375

$F(1.625) = -0.359$

Q12 $F(x) = x^3 - 4x^2 - 5 = 0$

$F(1) = 1 - 4 - 5 = -8$

$F(4) = -5$

Let $x_0 = 4$

We know, $x_{n+1} = x_n - \frac{F(x_n)}{F'(x_n)}$

$F'(x) = 3x^2 - 8x$

$$x_1 \Rightarrow 4 - \frac{(4)^3 - 4(4)^2 - 5}{3(4)^2 - 8 \times 4} \Rightarrow 4 - 4.3125$$

$$x_2 \Rightarrow -0.3125 - \frac{(-0.3125)^3 - 4(-0.3125)^2 - 5}{3(-0.3125)^2 - 8(-0.3125)}$$

$$x_2 \Rightarrow -0.3125 - \frac{(-0.3125)^3 - 4(-0.3125)^2 - 5}{3(-0.3125)^2 - 8(-0.3125)} = 1.638496503$$

And $\Rightarrow x = 1.628$

Q13 We know, $y - y_1 = \frac{(x - x_1)(y_2 - y_1)}{x_2 - x_1}$

Here $x = 1.425$, $x_1 = 1.42$, $x_2 = 1.43$
 $y_1 = 0.9222$, $y_2 = 0.9236$

so, $y = ?$

$\Rightarrow y = \frac{(1.425 - 1.42) \times (0.9236 - 0.9222)}{0.9236 - 0.9222} + 0.9222$

$y = 0.9229$

Q14 let The Two integers be $x, x+1$

$-21 \leq x + x+1 = 2x+1$

$2x = -22$ $x = -11$

$x+1 = -10$

so the two consecutive integers are, $-10, -11$

Q14 let The two integers be $x, x+1$

then, $x + x+1 \geq -21$

$2x+1 \geq -21$

$2x \geq -22$

$x \geq -11$

$x+1 \geq -10$

the smallest integers are $-11, -10$