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Anecito, Mary Kate F.

$f(x) = x^3 - 4x + 1$, 2 4 Iterations

1 $f(x) = x^3 - 4x + 1$ | $f'(x) = 3x^{3-1} - 4$
$= 3x^2 - 4$
$= 2^3 - 4(2) + 1$ | $= 3(2)^2 - 4$
$= 8 - 8 + 1$ | $= 3(4) - 4$
$= 0 + 1$ | $= 12 - 4$
$= 1$ | $= 8$

$x_{n+1} = 2 - \left(\frac{1}{8}\right) = \frac{16-1}{8} = \frac{15}{8}$
$= \boxed{1.875}$

$1.875 - 1 = 0.875$

2 $f(1.875) = (1.875)^3 - 4(1.875) + 1$ | $f'(1.875) = 3(1.875)^2 - 4$
$= 6.592 - 7.5 + 1$ | $= 3(3.516) - 4$
$= -0.908 + 1$ | $= 10.548 - 4$
$= 0.092$ | $= 6.548$

$1.861 - 1 = 0.861$

$x_{n+1} = 1.875 - \left(\frac{0.092}{6.548}\right) = 1.875 - 0.014 = \boxed{1.861}$

3 $f(1.861) = (1.861)^3 - 4(1.861) + 1$ | $f(1.861) = 3(1.861)^2 - 4$
$= 6.445 - 7.444 + 1$ | $= 3(3.463) - 4$
$= -0.999 + 1$ | $= 10.389 - 4$
$= 0.001$ | $= 6.389$

$x_{n+1} = 1.861 - \left(\frac{0.001}{6.389}\right) = 1.861 - 0.000 = \boxed{1.861}$ $1.861 - 1 = 0.861$

4 $f(1.861) = (1.861)^3 - 4(1.861) + 1$ | $f'(1.861) = 3(1.861)^2 - 4$
$= 6.445 - 7.444 + 1$ | $= 3(3.463) - 4$
$= -0.999 + 1$ | $= 10.389 - 4$
$= 0.001$ | $= 6.389$ $1.861 - 1 = 0.861$

$x_{n+1} = 1.861 - \left(\frac{0.001}{6.389}\right) = 1.861 - 0.000 = \boxed{1.861}$

$f(x) = x^3 - 2x^2 + 3$, 1 4 Iterations

1 $f(x) = x^3 - 2x^2 + 3$ | $f'(x) = 3x^{3-1} - 2(2)x^{2-1}$
$= 3x^2 - 4x$ $x_{n+1} = 1 - \left(\frac{2}{-1}\right) = 1 + 2 = \boxed{3}$
$f(1) = 1^3 - 2(1)^2 + 3$ | $f'(1) = 3(1)^2 - 4(1)$
$= 1 - 2(1) + 3$ | $= 3 - 4$ $3 - 1 = 2$
$= 1 - 2 + 3$ | $= -1$
$= -1 + 3$
$= 2$

② $f(3) = 3^3 - 2(3)^2 + 3$
$= 27 - 2(9) + 3$
$= 27 - 18 + 3$
$= 9 + 3$
$= 12$

$f'(3) = 3(3)^2 - 4(3)$
$= 3(9) - 12$
$= 27 - 12$
$= 15$

$X_{n+1} = 3 - \left(\frac{12}{15}\right) = 3 - \frac{4}{5}$
$= \frac{15 - 4}{5} = \frac{11}{5}$
$= \boxed{2.2}$

③ $f(2.2) = (2.2)^3 - 2(2.2)^2 + 3$
$= 10.648 - 2(4.840) + 3$
$= 10.648 - 9.680 + 3$
$= 0.968 + 3$
$= 3.968$

$f'(2.2) = 3(2.2)^2 - 4(2.2)$
$= 3(4.84) - 8.8$
$= 14.52 - 8.8$
$= 5.720$

$1.506 - 1 = 0.506$

$X_{n+1} = 2.2 - \left(\frac{3.968}{5.720}\right) = 2.2 - 0.694 = \boxed{1.506}$

④ $f(1.506) = (1.506)^3 - 2(1.506)^2 + 3$
$= 3.416 - 2(2.268) + 3$
$= 3.416 - 4.536 + 3$
$= -1.12 + 3$
$= 1.88$

$f'(1.506) = 3(1.506)^2 - 4(1.506)$
$= 3(2.268) - 6.024$
$= 6.804 - 6.024$
$= 0.780$

$1 - (-0.904) = 1.904$

$X_{n+1} = 1.506 - \left(\frac{1.88}{0.780}\right) = 1.506 - 2.410 = \boxed{-0.904}$

$f(x) = x^2 - 2x - 5$, ②, 3 Iterations

① $f(x) = x^2 - 2x - 5$
$f(2) = 2^2 - 2(2) - 5$
$= 4 - 4 - 5$
$= -5$

$f'(x) = 2x^{2-1} - 2$
$= 2x - 2$
$f'(2) = 2(2) - 2$
$= 4 - 2$
$= 2$

$X_{n+1} = 2 - \left(\frac{-5}{2}\right)$
$= \frac{4 + 5}{2} = \frac{9}{2} = \boxed{4.5}$

② $f(4.5) = (4.5)^2 - 2(4.5) - 5$
$= 20.25 - 9 - 5$
$= 11.25 - 5$
$= 6.25$

$f'(4.5) = 2(4.5) - 2$
$= 9 - 2$
$= 7$

$3.607 - 2 = 1.607$

$X_{n+1} = 4.5 - \left(\frac{6.25}{7}\right) = 4.5 - 0.893 = \boxed{3.607}$

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3 $f(3.607) = (3.607)^2 - 2(3.607) - 5$

$= 13.010 - 7.214 - 5$

$= 5.796 - 5$

$= 0.796$

$f'(3.607) = 2(3.607) - 2$ $\quad 3.454 - 2 = 1.454$

$= 7.214 - 2$

$= 5.214$

$X_{n+1} = 3.607 - \left(\frac{0.796}{5.214}\right) = 3.607 - 0.153 = \boxed{3.454}$