

Home work-2

(i)		x	y
		0.5	-0.375
x_1	{	0.6	-0.184
x_2		0.7	0.043
		0.8	0.312
		0.9	0.629
		1	1

Approximate value of x

$$\frac{x_1 y_2 - x_2 y_1}{y_2 - y_1}$$

$$= \frac{(0.6 \times 0.043) - (-0.184 \times 0.7)}{0.043 + 0.184}$$

$$= \frac{0.258 + 0.1288}{0.227}$$

$$= 0.68105726 \text{ --- approx}$$

~~Q2. Find the root~~

$$x^2 - 4x + 1 = 0$$

between ~~1~~ 1 & 2

	x	y	
	1.7	-0.887	
x_1	1.8	-0.368	y_1
x_2	1.9	0.259	y_2

$$\frac{x_1 y_2 - y_2 x_1}{y_2 - y_1}$$

$$\frac{(1.8 \times 0.259) - (1.9 \times -0.368)}{0.259 + 0.368}$$

$$= \frac{0.4662 + 0.6992}{0.627}$$

$$= 1.85869$$

2nd try

$$\frac{(1.85869 \times 0.259) - (1.9 \times \cancel{0.368})}{\cancel{0.627}}$$

$$0.259 + 0.1349$$

$$= \frac{0.73771}{0.259 + 0.1349}$$

$$= 1.872837548 \text{ - approx}$$

⑧ $x^3 + 2x^2 - 8 = 0$ $1.501 < x < 1.52$

x	y
$x_1 = 1.506$	-0.049
$x_2 = 1.508$	$-0.022 = y_1$
$x_2 = 1.51$	$0.0031 = y_2$
1.512	0.0289

$$\frac{x_1 y_2 - y_2 x_1}{y_2 - y_1}$$

$$\frac{(1.508 \times 0.0031) - (1.51 \times -0.022)}{0.0031 + 0.022}$$

$$= 1.509452988 \text{ --- approx}$$

⑨ $x^3 - 9x + 1 = 0$ $2.9 < x < 2.95$

x	y	Formula
2.93	-0.216	$\frac{x_1 y_2 - y_2 x_1}{y_2 - y_1}$
$x_1 = 2.94$	$-0.047 = y_1$	
$x_2 = 2.95$	$0.1223 = y_2$	

$$\frac{(2.94 \times 0.1223) - (2.95 \times -0.047)}{0.1223 + 0.047}$$

$$= \frac{0.498212}{0.1223 + 0.047}$$

$$= 2.942476137$$

(10) $x^3 - x - 4 = 0$ [$1.7 < x < 1.8$]

	x	y	formula
x_1	1.78	-0.14	$\frac{x_1 y_2 - y_1 x_2}{y_2 - y_1}$
x_2	1.79	-0.054	
	1.8	0.032	

$$\frac{(1.79 \times 0.032) - (1.8 \times -0.054)}{0.032 + 0.054}$$

[1.79627907] - approx