

Graphical Solution of Equations

1. Given the curve $y = x^2 - 3x - 2$, copy and complete the following table.

x	-2	-1	0	1	2	3	4
y	8				-4		

- (a) Plot the curve with $-2 \leq x \leq 4$ and $-5 \leq y \leq 8$. [Use your calculator to find more values if the shape of the curve is not clear to you.]
 (b) Use your graph to estimate to one decimal place the solutions of

$$0 = x^2 - 3x - 2.$$

- (c) Use your graph to estimate to one decimal place the solutions of

$$0 = x^2 - 3x - 1.$$

- (d) Find the equation of the line you would add to your graph to help you solve $0 = x^2 - 2x + 3$.
 (e) Find the equation of the line you would add to your graph to help you solve $0 = x^2 + 3x + 5$.

2. Given the curve $y = -x^3 + 3x + 1$, copy and complete the following table.

x	-2	-1.5	-1	-0.5	0	0.5	1	1.5	2
y	3				1				-1

- (a) Plot the curve with $-2 \leq x \leq 2$ and $-2 \leq y \leq 4$. [Use your calculator to find more values if the shape of the curve is not clear to you.]
 (b) Use your graph to estimate to one decimal place the solutions of

$$0 = -x^3 + 3x + 1.$$

- (c) Use your graph to estimate to one decimal place the solutions of

$$0 = -x^3 + 3x - 1.$$

- (d) Find the equation of the line you would add to your graph to help you solve $0 = -x^3 + 5x - 2$.
 (e) Find the equation of the line you would add to your graph to help you solve $0 = -x^3 - 2x + 5$.
 (f) Find the equation of the *curve* you would add to your graph to help you solve $0 = -x^3 + x^2 + 3x + 2$.

3. Given the curve $y = x^3 + x^2 - 2x - 1$, copy and complete the following table.

x	-2	-1.5	-1	-0.5	0	0.5	1	1.5	2
y	-1				-1				7

- (a) Plot the curve with $-2 \leq x \leq 2$ and $-2 \leq y \leq 7$. [Use your calculator to find more values if the shape of the curve is not clear to you.]
- (b) Use your graph to estimate to one decimal place the solutions of

$$0 = x^3 + x^2 - 2x - 1.$$

- (c) Find the equation of the line you would add to your graph to help you solve $0 = x^3 + x^2 - 2x$. $y = -1$
- (d) Find the equation of the line you would add to your graph to help you solve $0 = x^3 + x^2 + x + 1$. $y = -3x - 2$
- (e) Find the equation of the line you would add to your graph to help you solve $0 = x^3 + x^2 - 8x + 5$. $y = 6x - 6$
- (f) Find the equation of the *curve* you would add to your graph to help you solve $0 = x^3 - x^2 - 3x$. $y = 2x^2 + x - 1$