

FP1 Revision Worksheet Number 3

1. We want to plot a straight line $Y = mX + c$ to verify the following laws. Fill in the gaps in the table

Law	Y	X	m	c
$y = ax^2 + \frac{b}{x}$				
$y = ab^{-x}$				
$y = bx^a$				
$\frac{1}{y} = ax + bx^2$				

2. Show that the equation $x^4 - 5x + 2 = 0$ has a root between 0 and 1. Use linear interpolation once to get an approximation for this root.

3. Sketch the curve $y = \frac{x^2 + x + 1}{x^2 - 3x + 2}$ stating the equations of asymptotes and the coordinates of the points where the curve crosses the axes.

4. Find the general solution of the trig equation:

$$\tan\left(5x + \frac{\pi}{6}\right) = \sqrt{3}$$

5. $A = \begin{pmatrix} 1, 0 \\ -2, 2 \end{pmatrix}$ and $B = \begin{pmatrix} 0, 4 \\ 3, -1 \end{pmatrix}$. Find:

- (a) AB
 (b) BA
 (c) 3A-2B
 (d) 2A+AB

6. Sketch the following curve, giving its name, the equations of any asymptotes and the points at which it crosses the co-ordinate axes:

$$\frac{x^2}{4} - y^2 = 1$$

Now describe the transformations that change the above curve into the curve with equation:

$$\frac{(x-1)^2}{4} - (y+1)^2 = 1$$

Sketch this new curve.