FP1 Revision Worksheet Number 2

1. Fill in the gaps in the following table:

Matrix	$\begin{pmatrix}1,0\\0,-1\end{pmatrix}$		$\begin{pmatrix}-1,0\\0,-1\end{pmatrix}$		$\begin{pmatrix}4,0\\0,4\end{pmatrix}$
Description of transformation		**Rotation by 30° clockwise about the origin**		**Reflection in the line $y=\frac{1}{\sqrt{3}}x$**	

2. Give the general solution of the following trig equation:

$$\sin\left(x-\frac{\pi}{6}\right)=\frac{1}{\sqrt{2}}$$

3. Use Euler's step-by-step method, with a step length of 0.1 to estimate the value of y when x=0.3, given that y=1 when x=0 and $\frac{dy}{dx}=\frac{1}{\left(x^2+4\right)}$, giving your answer to 3 significant figures.

4. Solve the following quadratic equation:

$5x^2-8x+5=0$

5. Sketch the following curve:

$$y=\frac{1-2x}{x+1}$$

Hence or otherwise solve the following inequality:

$$\frac{1-2x}{x+1}>2$$

6. Find the following sum:

$$\sum_{r=5}^{10}3r^3$$

7. Sketch the following curve writing down the equations of any asymptotes or points where the curve cuts the co-ordinate axes:

$$y=\frac{2}{x^2-2x-3}$$

8. By differentiating FROM FIRST PRINCIPLES find the gradient of the curve $y=x^2-3x$ at the point where $x=2$