

## Advanced Higher Knowledge to know Prelim

List the 8 trig identities

1)

2)

3)

4)

5)

6)

7)

8)

Complete the exact value table

	0	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$	$\pi$	$3\pi/2$	$2\pi$
sin								
cos								
tan								

Negative Facts

1)  $\sin(-\theta) =$

2)  $\cos(-\theta) =$

3)  $\tan(-\theta) =$

## Parametric Equations

$$x = f(t) \quad y = f(t)$$

$$\text{Gradient} = m = \frac{dy}{dx} =$$

$$\frac{d^2y}{dx^2} =$$

$$\text{Speed} =$$

## Volume of Revolution for function around a and b

About the x axis:

About the y axis:

## Functions

Odd Function:

Even Function:

## Sequences

Arithmetic Term:

Geometric term:

Sum to infinity:

## Matrices

2 by 2

$$A = \begin{pmatrix} a & b \\ c & d \end{pmatrix} \quad \det A =$$

$$A^{-1} =$$

$$A' = A^T =$$

3 by 3

$$A = \begin{pmatrix} a & b & c \\ d & e & f \\ g & h & i \end{pmatrix}$$

$$\det A =$$

## Transformation Matrices

Reflection in x axis

Reflection in y axis

Scale by factor a

## Complex Numbers

If  $z = a + bi$

The modulus is given by

The Argument is given by

The conjugate is given by

## McLaurin Series Useful to Memorise

$$e^x =$$

$$\sin x =$$

$$\cos x =$$

## Differential Equations

For  $\frac{dy}{dx} + P(x) = Q(x)$  the integrating factor  $I(x) =$

The solution is given by

### Complementary Functions

Two real distinct roots

Real and Equal

Complex and Conjugate

### Particular Integrals

if  $\sin ax$  or  $\cos ax$  try

if  $e^{ax}$  try

if  $y = ax + b$  try

if  $y = ax^2 + bx + c$