

## Tutorial 1

1. Express in partial fractions the following expressions:

$$\frac{3x - 2}{x^2 - 3x + 2}$$

$$\frac{3x-2}{x^2-3x+2} = \frac{3x-2}{(x-2)(x-1)} = \frac{A}{(x-1)} + \frac{B}{(x-2)}$$

$$A = \frac{3x-2}{x-2} \Big|_{x=1}; A=$$

$$B = \frac{3x-2}{x-1} \Big|_{x=2}; B=$$

$$\frac{3x - 2}{x^2 - 3x + 2} = \frac{A}{(x - 1)} + \frac{B}{(x - 2)}$$

You can also use Matlab

```
>> syms x
>> partfrac((3*x-2)/(x^2 - 3*x + 2))
```

2. Express the following complex numbers in (a) polar form and (b) exponential form:

$$3 + j4$$

$$3 + j4 = 5 \angle ? \text{ rad (polar form)} = 5e^{j?} \text{ (exponential form)}$$

The **abs** and **angle** functions can be used to find the polar form components of a complex number.

```
>> a=3+4i
```

```
a =
```

```
3.0000 + 4.0000i
```

```
>> abs(a)
```

```
ans =
```

```
5
```

```
>> angle(a)
```

```
ans =
```

```
?
```