# Example Technology Exercise 1
# John Smith and Tom Brown

<span style="color:red">Use F9 for title</span>

## 1 See Word Document

<span style="color:red">Use F8 for numbered headings</span>

## 2 See Word Document

## 3 Find the limit

### 3.1 Problem 1.4.10

<span style="color:red">Use F7 for sub-numbered heading</span>

(%i1) limit((2-x)/(x^2-4),x,2,plus);

$$(\%o1)\ -\frac{1}{4}$$

### 3.2 Problem 1.4.13

(%i2) limit(abs(x)/x,x,0,minus);
(%o2) $-1$

### 3.3 Problem 1.4.21

(%i3) limit(cot(x),x,%pi);
(%o3) $infinity$

<span style="color:red">Use F6 for comments</span>

The value of infinity means that the absolute value
of the limits approach infinity, but that the sides
approach from different directions.  That is, one side
approaches positive infinity while the other side
approaches negative infinity.
We would say this limit does not exist.

### 3.4 Problem 1.4.25

(%i4) limit(2-floor(-x),x,3);
(%o4) $und$

The value of und means undefined.  But our language
for this is that the limit does not exist.

## 3.5 Problem 1.4.17

First define the piecewise function

(%i5) Y:if x <= 3 then (x+2)/2 else (12-2*x)/3;

$$(\%o5) \quad \text{if } x<=3 \text{ then } \frac{x+2}{2} \text{ else } \frac{12-2\,x}{3}$$

Now find the limit

(%i6) limit(Y,x,3,minus);

$$(\%o6) \quad \lim_{x\to 3-} \text{ if } x<=3 \text{ then } \frac{x+2}{2} \text{ else } \frac{12-2\,x}{3}$$

Gee, that wasn't very useful.
We have to help Maxima out.

Tell it that x < 3
I guess the - at the end isn't clear enough for it.
Then tell it to evaluate (ev) the expression.

(%i7) assume(x<3)$
      limit(Y,x,3,minus),ev;

$$(\%o8) \quad \frac{5}{2}$$