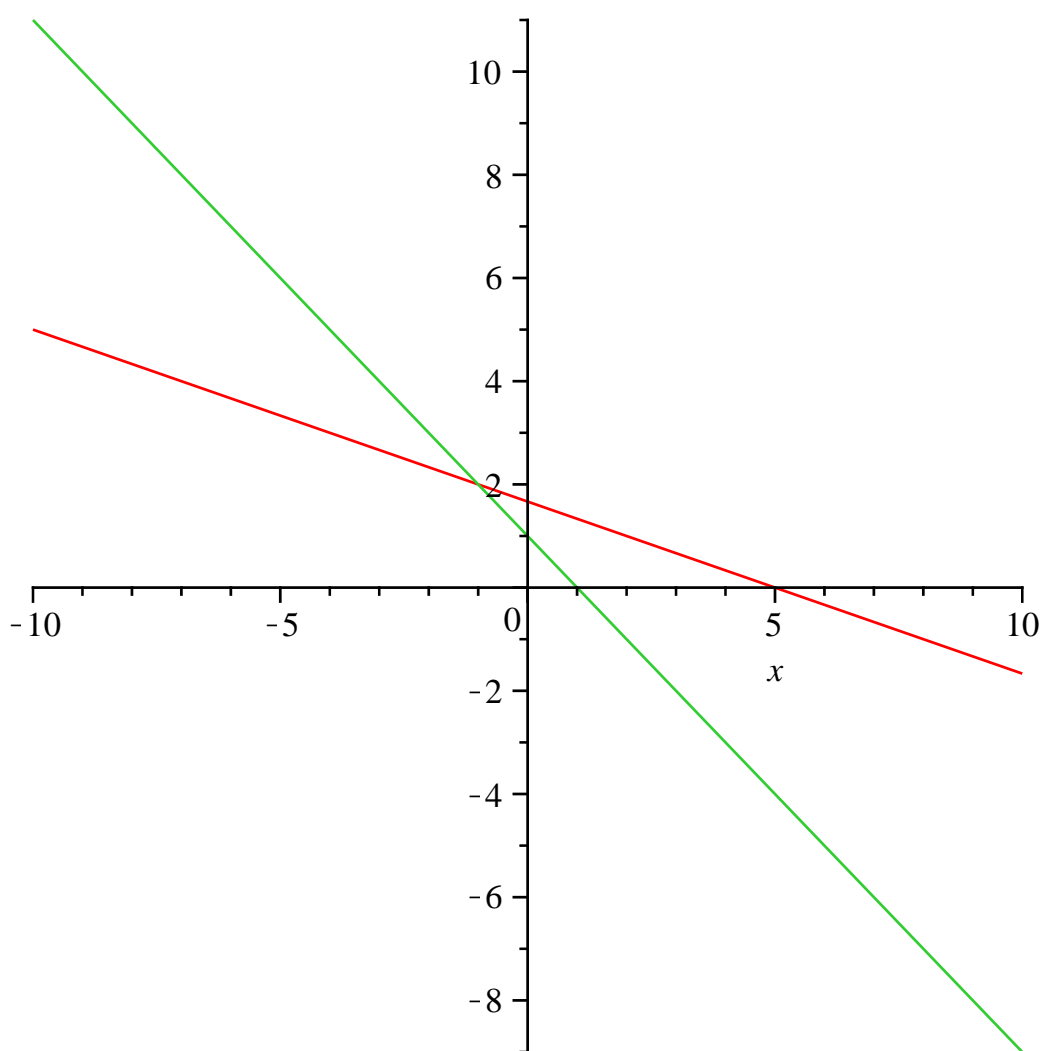


- > This is the worksheet we generated in class on January 24. I have added comments to make it easier to read.
- > $mySq := x \rightarrow x^2$; #define a simple function
 $mySq := x \rightarrow x^2$ (1)
- > $mySq(2)$; # call the function with a specific input
4 (2)
- > $dummy := mySq(3) + 2^{mySq(2)}$; #use the function in an arithmetic expression
 $dummy := 25$ (3)
- > restart;
- > $mySq(2)$; #after restarting the function is no longer available.
 $mySq(2)$ (4)
- > $Digits := 3$;
 $Digits := 3$ (5)
- > $d := 3$;
 $d := 3$ (6)
- > D ; #variables are case-sensitive
D (7)
- > $evalf(\pi)$; #illustrating the action of Digits in the next few lines.
3.14 (8)
- > $evalf(1000 \cdot \pi)$;
3140. (9)
- > $solve(\{x + 3 \cdot y = 5, x + y = 1\}, \{x, y\})$;
 $\{x = -1, y = 2\}$ (10)
- > $plot\left(\left\{\frac{(5-x)}{3}, -x+1\right\}\right)$; # plot cannot handle equations -- needs functions



```
> f2c := x →  $\frac{(x - 32) \cdot 5}{9}$ ; #simple function to convert Fahrenheit to Centigrade
```

$$f2c := x \rightarrow \frac{5}{9} x - \frac{160}{9} \quad (11)$$

```
> f2c(-15);
```

$$-\frac{235}{9} \quad (12)$$

```
> evalf(%);
```

$$-26.1 \quad (13)$$

```
> Digits := 20;
```

$$Digits := 20 \quad (14)$$

```
> solve(f2c(x) = x, x); #at what temp is it the same in F and C?
```

$$-40 \quad (15)$$

```
> f2c(-40); #double check
```

$$-40 \quad (16)$$

```
> #next define a function to compute the number of trailing zeroes of n! where n < 125.
```

```
numTrailingZeroes := x → iquo(x, 25) + iquo(x, 5);
```

$$numTrailingZeroes := x \rightarrow iquo(x, 25) + iquo(x, 5) \quad (17)$$

```
> numTrailingZeroes(98);
```

22 (18)

```
> #The function returns an incorrect answer when it is called with numbers >=125. We can fix  
this with the piecewise command.
```

```
nTZ124 := x → piecewise(x < 125, numTrailingZeroes(x), x ≥ 125,  
"Input out of range - function will only work correctly for inputs < 125");  
nTZ124 := x → piecewise(x < 125, numTrailingZeroes(x), 125 ≤ x,  
"Input out of range - function will only work correctly for inputs < 125")
```

(19)

```
> nTZ124(125);  
"Input out of range - function will only work correctly for inputs < 125"
```

(20)

```
>
```