## MA1M01 Calculus Assignment 1 Michælmas term week 3

www.maths.tcd.ie/pub/MA1M01/Calculus/

1. Consider the functions:

$$f(x) = 2x + 1, v(t) = \frac{\sqrt{t}}{2}, m(z) = \frac{1}{z}$$

- (a) **[5 points]** -5, 2, 0.1
- (b) **[5 points]** f(y) = 2y + 1,  $v(9t) = \frac{3\sqrt{t}}{2}$ ,  $m(2a) = \frac{1}{2a}$
- (c) [10 points] f(x) is defined for all real x, v(t) for all real  $t \ge 0$ , m(z) for all real z, where  $z \ne 0$
- (d) [20 points] Draw the graphs of the above functions.
- 2. Find the slope-intercept of the following:
  - (a) **[10 points]**  $y = mx + c, m = -\frac{1}{2}, c = \frac{13}{2}.$
  - (b) **[10 points]** y = mx + c, m = -3, c = 14.
- 3. You have been offered a voucher for a shop: you can buy any article for 25% off. When you arrive at the shop, you realise that there is also a discount of 20 euro.
  - (a) **[5 points]**  $y = f(p) = \frac{3p}{4}, y = g(p) = p 20$
  - (b) **[10 points]**  $m = \frac{3p}{4} 20 = g \frac{f}{3}$
  - (c) **[10 points]** 126.7 euro
  - (d) **[15 points]**  $m = \frac{3}{4}(p-20) = \frac{3p}{4} 15, m = \frac{3g}{4}$  or m = f 15, p = 120euro