Revision Sheet 2 – Algebra 2 (Chap 2) **Review: Fri 19/10/18**

Q1. Solve the equation below:

$$\frac{1}{x+1}+\frac{1}{x}=\frac{5}{6}$$

Q2. Solve the equations below:

$$3p+4q-2r=8$$
$$9p+8q+2r=-13$$
$$6p-12q+14r=-59$$

Q3. Solve the equations $x-4y=-13$ and $x^2+2y^2+6xy=29$.

Q4. Two whole numbers differ by 2 and their product is 143. Find the numbers.

Q5. Rearrange the formula below to make 'a' the subject of the formula:

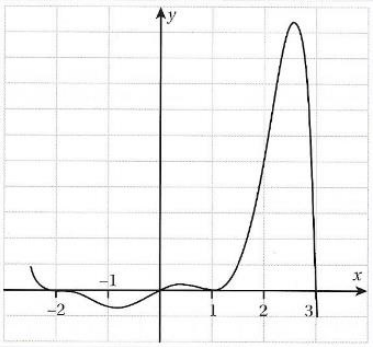
$$h=\sqrt{a^2+b^2}$$

Q6. If $(x+a)^2$ is a factor of $x^3+6px+k$, show that:
(i) $k+2a^3=0$ (ii) $k^2+32p^3=0$ and (iii) $a^2+2p=0$.

Q7. Solve $x^3+5x^2-4x-20=0$.

Q8. Form the quadratic equation with roots $\frac{5}{2}, -3$

Q9. The graph of the polynomial y = f(x) of degree 7 is shown below.



Find an expression for the polynomial f(x).

Q10. Sketch a rough graph of the polynomial $f(x) = (x+2)^3x^2(x-2)^2$.

Q11. If $x^2 + ax + 4$ is a factor of $x^3 + px^2 + qx + 4b$, show that $p = a + b$ and $q = 4 + ab$.

Q12. Find the real numbers a and b such that

$$x^2+4x-6=(x+a)^2+b.$$

Q13. If $f(x) = 3x^3+mx^2-17x+n$ and $x-3$ and $x+2$ are factors of f(x), find the values of m and n.

Q14. Two cars leave a town at the same time but travelling in opposite directions. Car A travels at a speed of 50 km/h and car B travels at a speed of 70 km/h. How long will it take for the cars to be 200km apart?

Q15. Solve the equation:

$$x^3-19x-30=0.$$

Answers:

Q1. $x=-\frac{3}{5}$ or $x=2$	Q2. $p=\frac{1}{3}, q=-\frac{3}{4}, r=-5$
Q3. $\left(\frac{1}{3}, \frac{10}{3}\right), (-9, 1)$	Q4. 11, 13 or -11, -13
Q5. $a=\pm\sqrt{h^2-b^2}$	Q7. 2, -2 and -5
Q8. $2x^2 + x - 15 = 0$	Q9. $f(x) = -(x+2)^3x(x-1)^2(x-3)$
Q12. a = 2, b = -10	Q13. m = -4, n = 6
Q14. 1hr 40 mins	Q15. x = -2, -3, 5