

4th Year Quadratics & Algebra Re-Test

1. Expand and collect like terms
 - (a) $(2a - b)(b + a) - (a^2 - b^2)$.
 - (b) $(2a - b)^2 - (a - 2b)^2$.
2. Find the equation of the line through $(0, 4)$ and $(0, -5)$.
3. Find the equation of the line through $(7, -2)$ and $(9, -1)$, eliminating all fractions from your answer.
4. Find the equation of the line through $(0, -2)$ perpendicular to $4x - 5y = 0$, eliminating all fractions from your answer.
5. Find where the line $2x - 7y = 21$ crosses the x and y -axes.
6. Make x the subject in $a\sqrt{x^2 + b^2} = c$.
7. Make x the subject in $a(b - x) = x(c - d)$.
8. Make x the subject in $\frac{x}{x-1} = a$.
9. Factorise
 - (a) $x^2 - 7x + 12$.
 - (b) $6x^2 - 12x$.
 - (c) $6x^2 + x - 2$.
 - (d) $2px + 2py + 3qx + 3qy$.
 - (e) $8x^2 - 98$.
 - (f) $4x^2 + 14x + 12$.
 - (g) $800x^2 - 500 + 1800x$.
10. Solve
 - (a) $(2x + 1)(x - 3) = 0$.
 - (b) $x^2 = -8x$.
 - (c) $2x^2 = 4x + 6$.
 - (d) $(x - 2)^2 = (x + 1)^2$.
 - (e) $6x^2 + x = 2$.
 - (f) $(x - 1)(x + 2)(2x - 1)(5x + 3) = 0$. [not a lot of working for this part... don't multiply out!]
11. Solve the following sets of simultaneous equations
 - (a) $\begin{cases} 2x - y = -2 \\ 3x + 4y = -25 \end{cases}$
 - (b) $\begin{cases} y = x - 3 \\ x^2 + 2y^2 = 9 \end{cases}$
 - (c) $\begin{cases} y = 2x + 1 \\ 2x^2 + y^2 = 11 \end{cases}$