

4th Year Quadratics & Algebra Re-Test Practice Sheet

1. Factorise

(a) $3x^2 + 9x - 12.$

$3(x-1)(x+4)$

(b) $7x^2 - 14x + 7.$

$7(x-1)^2$

(c) $32x^2 - 8x.$

$8x(4x-1)$

(d) $18x^2 - 2.$

$2(3x+1)(3x-1)$

(e) $2px + 2py + qx + qy.$

$(2p+q)(x+y)$

(f) $10xp + 5xq + 4py + 2qy.$

$(5x+2y)(2p+q)$

(g) $12x^2 + 2x - 4.$

$2(2x-1)(3x+2)$

(h) $30x^2 - 10x - 100.$

$10(3x+5)(x-2)$

2. Make x the subject in $\frac{x+a}{x-b} = \frac{c}{d}.$

$x = \frac{ad+bc}{c-d}$

3. Make x the subject in $c\sqrt{a + \sqrt{b - \sqrt{x - e}}} = d.$

$x = e + \left(b - \left(\frac{d}{c}\right)^2 - a\right)^2$

4. Find the equation of the line through $(4, -2)$ and $(7, -2).$

$y = -2$

5. Find the equation of the line through $(3, 1)$ which is parallel to $3x - 2y = 7.$ □

6. Find where the line $5x + 2y = 60$ crosses the x and y -axes.

$(0, 30)$ and $(12, 0)$

7. Solve the following equations:

(a) $(x-7)(2x+1) = 0.$

$x = 7, x = -1/2$

(b) $x(2x-3)(5x-4)(6x+1) = 0.$

$x = 0, x = 3/2, x = 4/5, x = -1/6$

(c) $36x^2 = 27x + 9.$

$x = 1, x = \dots$

(d) $30x^2 = 10x + 140.$

$x = -2, x = \dots$

(e) $4x^2 = x.$

$x = 0, x = 1/4$

(f) $(2x+1)^2 = (x+3)^2.$

$x = 2, x = \dots$

8. Solve the following sets of simultaneous equations:

(a)
$$\begin{cases} 3x - 4y = 6 \\ x - 3y = 7 \end{cases}$$

$x = -2, y = -3$

(b)
$$\begin{cases} y = 2x + 2 \\ 4x^2 + y^2 = 10 \end{cases}$$

$x = 1/2, y = 3$