

Quadratics 2 Revision

- 1) Write the following in the form $(x + a)^2 + b$
 - a) $x^2 + 4x - 1$
 - b) $x^2 - 5x - 2$
 - c) $x^2 + x + 7$

- 2) Write $2x^2 + 6x + 10$ in the form $a(x + b)^2 + c$

- 3) Find the vertex of the following curves and write down the equation of their line of symmetry.
 - a) $y = x^2 + 6x - 1$
 - b) $y = x^2 - 8x$

- 4) Solve the following, give answers to 3sf
 - a) $x^2 + 2x - 1 = 0$
 - b) $3x^2 - 12x + 4 = 0$
 - c) $\frac{9}{x-1} = x + 2$
 - d) $(2x + 1)^2 = 3x + 8$

- 5) A triangle has a base 4 longer than its height. If its area is 10cm^2 , find its base.

- 6) Two positive numbers that differ by 7 multiply together to make 40. Find the numbers.

- 7) A box is 3cm longer than it is wide. It is 6cm tall. If its volume is 50cm^3 , find out how wide it is.

- 8) Write down the equation of a circle with centre at $(0,0)$ and radius of 4

- 9) Describe the following line: $x^2 + y^2 = 18$

- 10) Find the point(s) where the following lines cross:
 - a) $x^2 + y^2 = 10$ and $y = x + 2$
 - b) $xy = 4$ and $x + y = 5$
 - c) $2x^2 + y + y^2 = 8$ and $3y - 2x = 4$

- 11) Find the equation of the tangent to the circle $x^2 + y^2 = 20$ at the point (2,4)
- 12) Find the equation of the tangent to the circle $x^2 + y^2 = 5$ at the point (2,-1)

Answers

- 1a) $(x + 2)^2 - 5$ b) $(x - \frac{5}{2})^2 - \frac{33}{4}$ c) $(x + \frac{1}{2})^2 + \frac{27}{4}$ 2) $2(x + \frac{3}{2})^2 + \frac{11}{2}$
- 3a) (-3,-10) $x = -3$ b) (4,-16) $x = 4$ 4a) 0.414, -2.41 b) 3.63, 0.367
- c) 2.85, -3.85 d) 1.20, -1.45 5) 2.90 6) 3.73 and 10.73 7) 1.75
- 8) $x^2 + y^2 = 16$ 9) circle centre (0,0) radius = $3\sqrt{2}$ 10a) (1,3) and (-3,-1)
- b) (1,4) and (4,1) c) (1,2) and (-2,0) 11) $y = -\frac{1}{2}x + 5$ 12) $y = 2x - 5$