



Quadratic Simultaneous Equations Exam Practice

Q1. Solve the simultaneous equations:

$$x^2 + y^2 = 17$$

$$2x + y = 2$$

Answer: _____
(5 marks)

Q2. Solve the simultaneous equations:

$$x^2 + y^2 = 97$$

$$3y + 5x = 33$$

Answer: _____
(5 marks)



Q3. Solve the simultaneous equations:

$$2x^2 + y^2 = 59$$

$$3x + 7y = 36$$

Answer: _____
(5 marks)

Q4. Find all the solutions to the pair of simultaneous equations:

$$y^2 - 4x = 13$$

$$y - 2x = -1$$

Answer: _____
(6 marks)



Q5. Find all the solutions to the pair of simultaneous equations:

$$x^2 - 2x = y + 7$$

$$y - x = 3$$

Answer: _____
(6 marks)

Q6. Solve the simultaneous equations:

$$3s + t = 8$$

$$3s^2 + t^2 = 28$$

Answer: _____
(5 marks)



Q7. Solve the simultaneous equations:

$$s + 2t = 3$$

$$3st + s^2 = 10$$

Answer: _____

(6 marks)



Applied Mixed Practice Problems

Q8. Given the pair of simultaneous questions

$$a + 4b = 2$$

$$3b^2 + ab = -11$$

show that $b^2 - 2a - 11 = 0$

a) show that $b^2 - 2a - 11 = 0$

Answer: _____
(2 marks)

b) hence solve the pair of simultaneous equations

Answer: _____
(3 marks)



Q9. Sandy throws a ball in a sport-hall.

- The height h of the ball in metres can be modelled by the quadratic equation, $h = -0.05x(x - 32)$, where x is the horizontal distance travelled.
- The roof of the sports-hall can be modelled by the linear equation, $y - 0.15x - 8 = 0$.

a) Show that the model predicts that the ball hits the roof of the sports-hall.

Answer: _____
(4 marks)

b) State the horizontal distance from Sandy to the point directly below the roof of the point of contact. Give your answer to 1 decimal place.

Answer: _____
(2 marks)

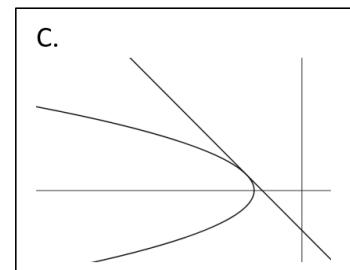
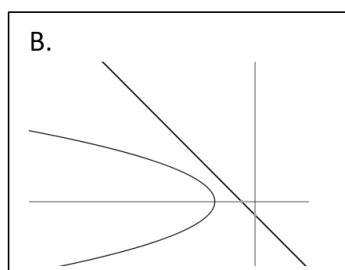
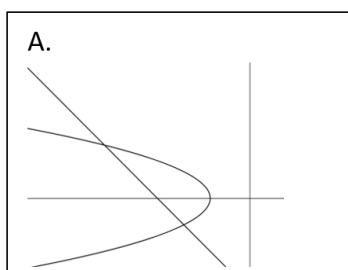


Q10. A curve has equation, $y^2 + 2x + 6 = 0$ and a line has equation $y + x + 7 = 0$.

a) Find the co-ordinates of any points where the line and the curve meet.

Answer: _____
(5 marks)

b) Which of these diagrams below represent the curve and the line?
You must explain your choice.



Answer: _____
(1 mark)



Q11. Solve the pair of simultaneous equations

$$y + 4x = 2$$

$$3x^2 + xy = 11.$$

Give your answer in the form $a + b\sqrt{3}$ where a, b are whole numbers.

Answer: _____
(5 marks)