

1. Solve $y = x^2$ and $y = 4$ (set equal).

$$x^2 = 4$$

Answer: (2,4) and (-2,4)

2. Solve $y = x^2$ and $y = x + 2$.

$$x^2 = x + 2; x^2 - x - 2 = 0$$

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

Answer: (2,4) and (-1,1)

3. Solve $y = x^2 - 1$ and $y = 3$.

$$x^2 - 1 = 3; x^2 = 4$$

Answer: (2,3) and (-2,3)

4. Solve $y = x^2 + 2x$ and $y = x + 2$.

$$x^2 + 2x = x + 2; x^2 + x - 2 = 0$$

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

Answer: (-2,0) and (1,3)

5. $f(x) = x^2$, $g(x) = 8x - 15$. For which x is $f = g$? (Trainer echo - Aug 2025 Q6!)

$$x^2 - 8x + 15 = 0$$

$$(x-3)(x-5)$$

Answer: $x = 3$ and 5

6. Solve $y = x^2 - 4$ and $y = 2x - 1$.

$$x^2 - 4 = 2x - 1; x^2 - 2x - 3 = 0$$

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

Answer: (3,5) and (-1,-3)

7. How many times can a line cross a parabola?

Solve a quadratic: 0, 1, or 2 real roots

Answer: 0, 1, or 2

8. Solve $y = x^2 + 9x + 4$ and $y - 2x = -6$. (Trainer echo - June 2025 Q34!)

$$\text{Line: } y = 2x - 6$$

$$x^2 + 9x + 4 = 2x - 6$$

$$x^2 + 7x + 10 = 0; (x+5)(x+2)$$

Answer: (-5,-16) and (-2,-10)

9. A line $y = 2x + 1$ meets $y = x^2 + 1$. Find both points, and the distance between their x -values. ★ challenge

$$x^2 + 1 = 2x + 1; x^2 - 2x = 0$$

$$x = 0, 2$$

Answer: (0,1),(2,5); x -gap = 2

10. For what value of c does $y = x^2$ and $y = x + c$ meet at exactly ONE point? (Hint: discriminant = 0.) ★ c

$$x^2 - x - c = 0; b^2 - 4ac = 1 + 4c = 0$$

Answer: $c = -1/4$