

Parabola

Questions are in the given forms $y = ax^2 + bx + c$ or $4c(y - q) = (x - p)^2$
 $x = ay^2 + by + c$ or $4c(x - p) = (y - q)^2$

$$1. \quad \begin{aligned} -2(x-4) &= (y+3)^2 \\ y &= -\frac{1}{2}y^2 - 3y - \frac{1}{2} \end{aligned}$$

$$2. \quad \begin{aligned} \frac{1}{2}(y+2) &= (x-3)^2 \\ y &= 2x^2 - 12x + 16 \end{aligned}$$

$$3. \quad \begin{aligned} \frac{1}{4}(y+3) &= (x-4)^2 \\ y &= 4x^2 - 32x + 61 \end{aligned}$$

$$4. \quad \begin{aligned} 6(y+1) &= (x-2)^2 \\ y &= \frac{1}{6}x^2 - \frac{2}{3}x - \frac{1}{3} \end{aligned}$$

$$5. \quad \begin{aligned} -4(x+4) &= (y-3)^2 \\ x &= -\frac{1}{4}y^2 - \frac{2}{3}y + \frac{25}{4} \end{aligned}$$

$$6. \quad \begin{aligned} \frac{1}{8}(x+1) &= (y-2)^2 \\ x &= 8y^2 - 32y + 31 \end{aligned}$$

$$7. \quad \begin{aligned} \frac{1}{4}(x-3) &= (y+2)^2 \\ x &= 4y^2 + 16y + 19 \end{aligned}$$

$$8. \quad \begin{aligned} \frac{1}{12}(x-2) &= (y+1)^2 \\ x &= 12y^2 + 24y + 14 \end{aligned}$$

$$9. \quad \begin{aligned} \frac{1}{24}(y+4) &= (x-7)^2 \\ y &= 24x^2 - 336x + 1172 \end{aligned}$$

$$10. \quad \begin{aligned} 8(y+2) &= (x+5)^2 \\ y &= \frac{1}{8}x^2 + \frac{5}{4}x + 9 \end{aligned}$$

Note: These questions can be used to practice completing the trinomial square since the second part of each question is the result of completing the trinomial square.