

1. Write down the coordinates of the focus of the parabola $x^2 = 8y$.
2. Write down the directrix of the parabola $x^2 = -12y$.
3. The equation of a parabola is $x^2 = 8(y + 2)$
 - (a) Find the coordinates of the vertex of this parabola.
 - (b) Find the coordinates of the focus of this parabola.
 - (c) Write down the equation of the directrix of the parabola.
4. The equation of a parabola is $y = x^2 - 6x + 5$. By completing the square, find the coordinates of:
 - (a) the vertex.
 - (b) the focus.
5. The focus of a parabola is $S(0, 3)$ and its directrix is the line $y = -3$. What is the equation of the parabola?
6. Find the equation of the parabola which has:
 - (a) vertex $(-2, -1)$ and focus $(-2, 3)$.
 - (b) focus $(3, -2)$ and directrix $x = 5$.
 - (c) vertex $(2, 4)$ and also passes through the point $(4, 5)$.
7.
 - (a) Find the equations of the tangents to the parabola $x^2 = 4y$ at the points $(2, 1)$ and $(-2, 1)$.
 - (b) Show that these tangents intersect on the directrix.
8. Find the equation of the normal to the parabola $x^2 = 5y$ at the point $(-5, 5)$.