5. Find the equation of the plane tangent to \( z^2 = x^2 + y^2 \) at \( (3, 4, 5) \).

Gradients are \( \perp \) to level sets. View the surface as \( 0 = x^2 + y^2 - z^2 \)
\[
\nabla (\text{RHS}) \bigg|_{(3,4,5)} = 6 \hat{i} + 8 \hat{j} - 10 \hat{k}
\]
The tangent plane is
\[
6(x-3) + 8(y-4) - 10(z-5) = 0
\]

6. Find the equation of the line perpendicular to \( z^2 = x^2 + y^2 \) at \( (3, 4, 5) \).

Use the gradient from #5 the line through \( (3, 4, 5) \) and parallel to \( 6 \hat{i} + 8 \hat{j} - 10 \hat{k} \)

\[
\frac{x-3}{6} = \frac{y-4}{8} = \frac{z-5}{-10}
\]