

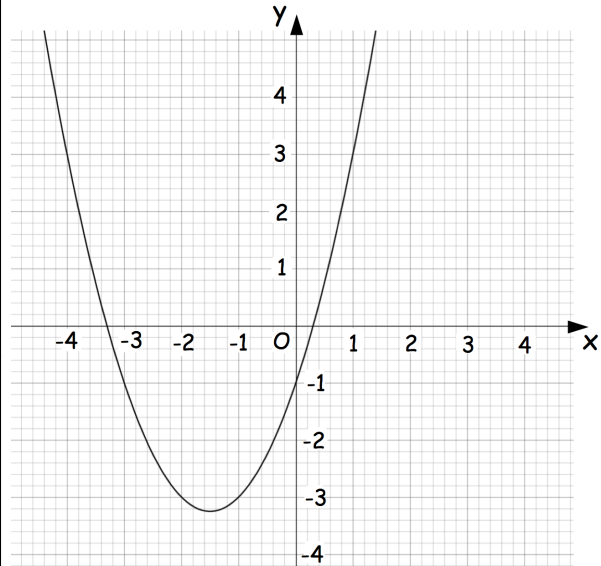


Express as a simplified fraction

0.45 $\dot{2}$

Shown is the graph of
 $y = x^2 + 3x - 1$

Write down the coordinates of the turning point.



Use the graph to find estimates to the roots of $x^2 + 3x - 1 = 0$

By drawing an appropriate linear graph, find estimates to the roots of $x^2 + 4x + 1 = 0$

A circle with centre $(0, 0)$ has diameter 20.
 Find the equation of the tangent to the circle at the point $(-8, -6)$.