**9H Implicit Differentiation**

1. Differentiate the following equation implicitly:

$$y^{3}=3x^{2}$$

1. Below is a sketch of the circle with equation $x^{2}+y^{2}=25$, $-5\leq x\leq 5$, $-5\leq y\leq 5$.

Find the gradient of the curve where $x=4$



1. Find $\frac{dy}{dx}$ in terms of $x$ and $y$ when:

$$x^{3}+x+y^{3}+3y=6$$

1. Given that $4xy^{2}+\frac{6x^{2}}{y}=10$, find the value of $\frac{dy}{dx}$ at the point (1,1)
2. Find the value of $\frac{dy}{dx}$ at the point (1,1), when:

$$e^{2x}lny=x+y+2$$