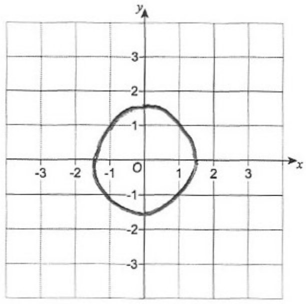
16th February **Higher Plus 5-a-day**

Corbettmαths

The cosine rule is $a^2 = b^2 + c^2 - 2bc \cos A$ Make cos A the subject. $2bc\cos A = b^2 + c^2 - a^2$	$\cos A = \dfrac{b^2 + c^2 - a^2}{2bc}$
Sketch $x^2 + y^2 = 2.25$ $r = 1.5$	
A bag contains 7 red sweets and 5 green sweets. Kelly removes 3 sweets, one at a time, without replacement. $1 - P(\text{same})$	Find the probability that she does not choose 3 sweets that are the same colour. $P(RRR) = \frac{7}{12} \times \frac{6}{11} \times \frac{5}{10} = \frac{7}{44}$ $P(GGG) = \frac{5}{12} \times \frac{4}{11} \times \frac{3}{10} = \frac{1}{22}$ $1 - \frac{1}{22} - \frac{7}{44} = \frac{35}{44}$
Show that the equation $x^3 + x = 20$ has a solution between 2 and 3. $x^3 + x - 20 = 0$ let $f(x) = x^3 + x - 20$ $f(2) = -10$ $f(3) = 10$	As $f(x)$ is continuous and there is a change of sign, there must be a solution between $x = 2$ and $x = 3$
Starting with $x_0 = 2$ use the iterative formula $x_{n+1} = \sqrt[3]{20 - x_n}$ four times to find an estimate for the solution of $x^3 + x = 20$ that lies between 2 and 3.	$x_0 = 2$ $x_1 = 2.6207...$ $x_2 = 2.59026...$ $x_3 = 2.591775...$ $x_4 = 2.591700574$