Name: _____ 5-a-day Higher Plus

20th December

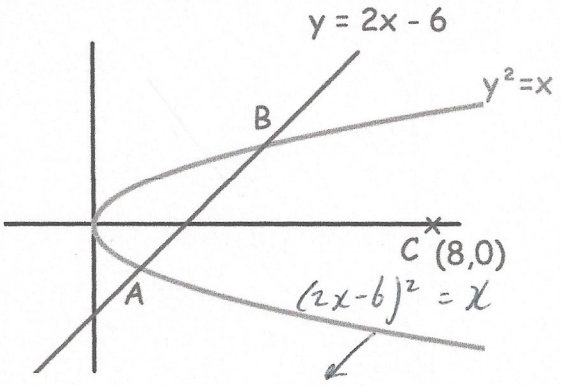
Corbettmaths

A circle with equation $x^2 + y^2 = 36$.
The line L1 is a tangent to the circle at the point (0, 6).
The line L2 passes through the points (–¾, 1) and (4, ¼)
The lines L1 and L2 intersect at the point C.

Find the coordinates of point C

L2: $y = -\frac{3}{19}x + \frac{67}{76}$

$(-32\frac{5}{12}, 6)$



$A\left(\frac{9}{4}, -\frac{3}{2}\right)$

$B(4, 2)$

$C = (8, 0)$

Shown below is the curve $y^2 = x$ and the line $y = 2x - 6$
The curve and the line meet at the points A and B
The point C is (8, 0)
Show ABC is a right angled triangle

$AB = \sqrt{(4-\frac{9}{4})^2 + (2--\frac{3}{2})^2} = \frac{7\sqrt{5}}{4}$

$AC = \sqrt{(8-\frac{9}{4})^2 + (0--\frac{3}{2})^2} = \frac{\sqrt{565}}{4}$

$BC = \sqrt{(8-4)^2 + (0-2)^2} = 2\sqrt{5}$

$\left(\frac{7\sqrt{5}}{4}\right)^2 + (2\sqrt{5})^2 = \left(\frac{\sqrt{565}}{4}\right)^2$ ✓

There are 8 counters in a bag.

5 of the counters are red
3 of the counters are white.

Tom takes at random three counters from the bag.

Work out the probability that the counters are not all the same colour.

$1 - P(\text{same})$

$P(RRR) = \frac{5}{8} \times \frac{4}{7} \times \frac{3}{6} = \frac{5}{28}$

$P(WWW) = \frac{1}{56}$ $(\frac{3}{8} \times \frac{2}{7} \times \frac{1}{6})$

$1 - (\frac{5}{28} + \frac{1}{56}) = \frac{45}{56}$

Find the nth term of the sequence

4 11 22 37 56
7 11 15 19
4 4 4

$an^2 + bn + c$

$a = 2$
$b = 1$
$c = 1$

$2n^2 + n + 1$