19th December

Corbettmaths

Rationalise the denominator of

$\frac{3+\sqrt{2}}{\sqrt{3}}$ $\frac{\times\sqrt{3}}{\times\sqrt{3}}$ $= \frac{3\sqrt{3}+\sqrt{6}}{3}$

$= \sqrt{3} + \frac{1}{3}\sqrt{6}$

The population of a country is 6.4×10^6 to the nearest hundred thousand

6400,000

The area of country is $8.4 \times 10^4 km^2$ to the nearest $100km^2$

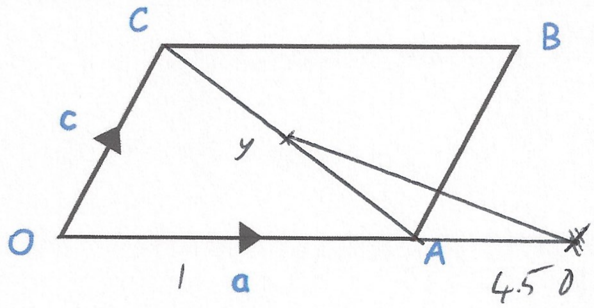
84000

Calculate the lower bound of the population density.

$PD_{min} = \frac{P_{min}}{A_{max}}$

$\frac{6350000}{84500}$

75.15



OABC is a parallelogram

$\overrightarrow{OA} = a \quad \overrightarrow{OC} = c$

Y is the midpoint of AC
OAD is a straight line where
OA:AD = m : 1

Given that

$\overrightarrow{YD} = 5a - \frac{1}{2}c$

$\overrightarrow{CA} = -c + a$

$\overrightarrow{YA} = -\frac{1}{2}c + \frac{1}{2}a$

Find the value of m

$\overrightarrow{YD} = \overrightarrow{YA} + \overrightarrow{AD}$

$\overrightarrow{YD} = (-\frac{1}{2}c + \frac{1}{2}a) + \overrightarrow{AD}$

$5a - \frac{1}{2}c = (-\frac{1}{2}c + \frac{1}{2}a) + \overrightarrow{AD}$

$\overrightarrow{AD} = 4\frac{1}{2}a$

$1 : 4.5$

$\frac{2}{9} : 1$

Solve the simultaneous equations

$y = x^2 + x + 2$
and
$x + 3y = 38$

$x = 38 - 3y$

$y = (38-3y)(38-3y) + (38-3y) + 2$

$y = 1444 - 228y + 9y^2 + 38 - 3y + 2$

$y = 1484 - 231y + 9y^2$

$0 = 1484 - 232y + 9y^2$

$(y-14)(9y-106)$

$y = 14$ or $y = \frac{106}{9}$

$x = -4 \quad x = \frac{8}{3}$

$(-4, 14)$

$\&\ (\frac{8}{3}, \frac{106}{9})$