Name: _____ 5-a-day Higher Plus

2nd December

Corbettmaths

Solve the simultaneous equations

$\frac{1}{4}y = x$ $\quad y = 4x$

$y = x^2 + 3$ $\quad 4x = x^2 + 3$

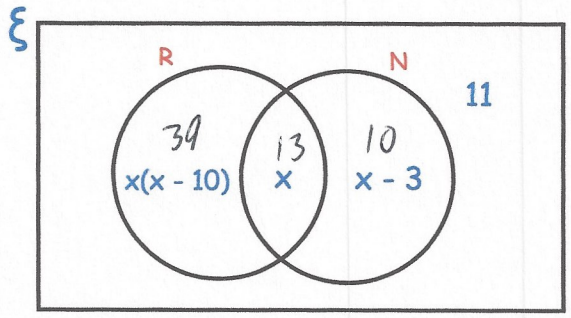
$x^2 - 4x + 3 = 0$

$x = 1 \quad y = 4 \quad (1, 4)$

$x = 3 \quad y = 12 \quad (3, 12)$

The Venn diagram shows information about cars in a car park.
ξ = 73 cars in the car park
R = red cards
N = cars under 4 years old

A car is chosen at random.
Given it is under 4 years old, find the probability that it is Red.



$x^2 - 10x + x + x - 3 + 11 = 73$

$x^2 - 8x + 8 = 73$

$x^2 - 8x - 65 = 0$

$(x - 13)(x + 5) = 0$

$x = 13$ ✓ or $x = -5$ ✗

$\frac{13}{23}$

Find the first 3 terms of the sequence $n^2 - 4n + 25$

22, 21, 22, 25, 30

Prove every term in the sequence $n^2 - 4n + 25$ is positive.

$(n-2)^2 - 4 + 25$

$(n-2)^2 + 21$

min is 0

∴ min value of term in the sequence is 21

A solid sphere is made from a material of density 5.4g/cm³ to the nearest 1 decimal place.
The mass of the sphere is 3000kg to 2 significant figures. (3050, 2950)
Find the difference between the smallest and largest possible lengths for the radius.

$D = \frac{m}{V}$ $\quad V = \frac{m}{D}$

Max V $= \frac{3050000}{5.35}$

$= 570093.4579\ cm^3$

$\therefore r = 51.44cm$

Min V $= \frac{2950000}{5.45}$

$= 541284.4037\ cm^3$

$\therefore r = 50.56cm$

0.88cm

$\text{Min } V = \frac{\text{min } m}{\text{max } V}$ $\quad \text{Max } V = \frac{\text{max } m}{\text{min } V}$