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

Show this has a root between $x = 1$ and $x = 2$

Let $f(x) = x^3 + x^2 - 3x - 2$

$f(1) = 1^3 + 1^2 - 3(1) - 2 = -3$

$f(2) = 2^3 + 2^2 - 3(2) - 2 = +4$

$f(x)$ is a continuous function. A sign change between $x = 1$ and $x = 2$ $\Rightarrow$ a root between $x = 1$ and $x = 2$

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

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

$$x = \sqrt[3]{-x^2 + 3x + 2}$$

$$x_{n+1} = \sqrt[3]{-x_n^2 + 3x_n + 2}$$

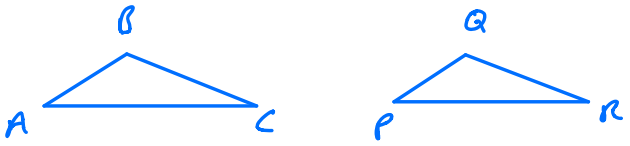
$x_0 = 2$

$$x_1 = \sqrt[3]{-2^2 + 3(2) + 2} = \sqrt[3]{4} = 1.587$$

$$x_2 = \sqrt[3]{-1.587^2 + 3(1.587) + 2} = 1.619$$

$$x_3 = \sqrt[3]{-1.619^2 + 3(1.619) + 2} = 1.618$$

Congruent Triangles



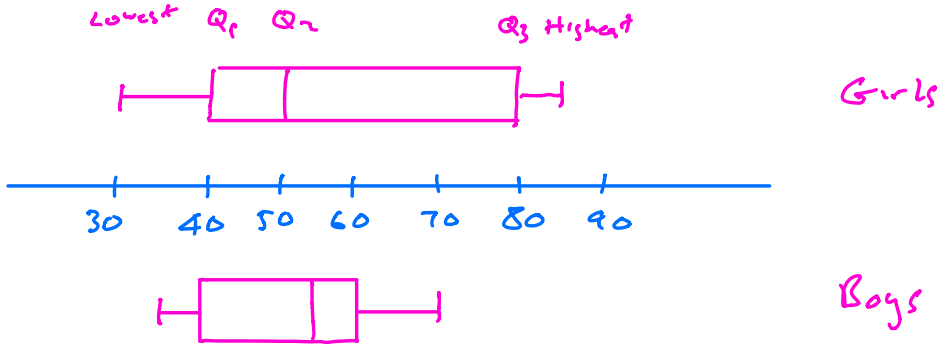
To prove $\triangle$s ABC and PQR are congruent

$ABC \equiv PQR$

You need to show:

1. S. S. S. — 3 sides the same
2. S. A. S. — 2 sides and included angle the same
3. A. A. S — 2 Angles and corresponding side the same
4. R. H. S — right, angle, hypotenuse and one other side the same.

Boxplots



On average boys performed better as they had a higher median score than the girls, 55 compared to 50.

The boys results were more consistent than the girls. They had an IQR of 20 compared to 40

Estimation

$$\frac{2.9 \times 1.8}{0.214} \approx \frac{3 \times 2}{0.2} = \frac{6}{0.2}$$

$$= \frac{60}{2}$$

$$= 30$$

Turning points

$$y = x^2 - 6x + 12$$

$$y = (x-3)^2 + 12 - 9$$

$$y = (x-3)^2 + 3$$