19th September

Corbettmaths

Solve the simultaneous equations

$2x - y = 7$
$xy = 15$

$y = 2x - 7$
$x(2x-7) = 15$
$2x^2 - 7x - 15 = 0$
$(x-5)(2x+3) = 0$

$x = 5$ or $x = -\frac{3}{2}$
$y = 3$ $\quad y = -10$
$(5, 3)$ $\quad (-1.5, -10)$

Here are the first 5 terms of a quadratic sequence

$an^2 + bn + c$

9 17 29 45 65

Find an expression, in terms of n, for the nth term of this quadratic sequence.

9 17 29 45 65
8 12 16 20
4 4 4
$a = 2 \quad b = 2 \quad c = 5$

$2n^2 + 2n + 5$

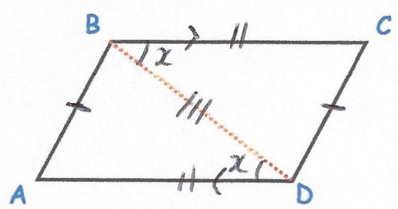
Solve to one decimal place

$$\frac{x-4}{x+5} - \frac{3x-2}{x+1} = 1$$

$$\frac{(x-4)(x+1) - (3x-2)(x+5)}{(x+5)(x+1)} = 1$$

$$\frac{(x^2-3x-4) - (3x^2+13x-10)}{(x+5)(x+1)} = 1$$

$-2x^2 - 16x + 6 = x^2 + 6x + 5$
$0 = 3x^2 + 22x - 1$ using Quadratic formula
$x = 0$ or $x = -7.4$



ABCD is a parallelogram.
Prove that triangles ABD and BCD are congruent.

$\angle CBD = \angle BDA$ (alternate angles)
$BC = AD$ opposite sides of a parallelogram
BD (shared)
SAS

Show

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

$\times \sqrt{6}$
$\times \sqrt{6}$

can be written as

$\frac{1}{5}(6 - \sqrt{6})$

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

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

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

$1 \div \frac{6+\sqrt{6}}{6} = 1 \times \frac{6}{6+\sqrt{6}}$

$\frac{6}{6+\sqrt{6}} \times \frac{(6-\sqrt{6})}{(6-\sqrt{6})} = \frac{36 - 6\sqrt{6}}{36-6}$

$\frac{36 - 6\sqrt{6}}{30} = \frac{6-\sqrt{6}}{5} = \frac{1}{5}(6-\sqrt{6})$

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