

30th March



CorbettmOths

Find an expression, in terms of n , for the n th term of the quadratic sequence

11 12 15 20
 1 3 5
 2 2

$$a = 1$$

$$b = -2$$

$$c = 12 \quad n^2 - 2n + 12$$

Solve $x^2 - 4x - 21 > 0$

$$(x-7)(x+3)$$

$x=7$ $x=-3$

$$x < -3 \quad \text{or} \quad x > 7$$

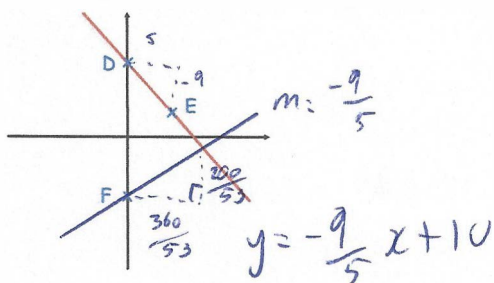
Prove $3n(3n+4) + (n-6)^2$ is positive for all values of n

$$9n^2 + 12n + n^2 - 12n + 36$$

$$\underline{10n^2 + 36}$$

$10n^2$ is always bigger than or equal to 0.

$$\therefore 10n^2 + 36 \text{ is } > 0.$$



Find the equation of the line perpendicular to DE and passing through $F(0, -6)$

$$y = \frac{5}{9}x - 6$$

A straight line passes through $D(0, 10)$ and $E(5, 1)$

$$\frac{5}{9}x - 6 = -\frac{9}{5}x + 10$$

$$\frac{106}{45}x = 16$$

$$x = \frac{360}{53} \quad y = -\frac{118}{53}$$

Find the shortest distance between the line passing through DE and the point F

$$\sqrt{\left(\frac{360}{53}\right)^2 + \left(\frac{200}{53}\right)^2}$$

$$= 7.77$$