

Year 12 Pure learning journey

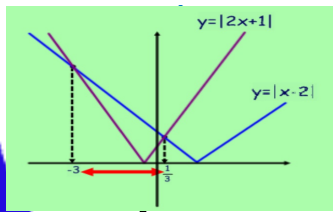
LEARNING JOURNEY



integral



Functions & graphs



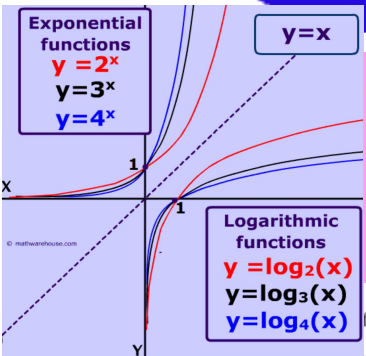
Algebraic methods

Composite Function
 $(f \circ g)(x) = f(g(x))$
 $f(x) = 3x - 5$ $g(x) = x^2 + 1$

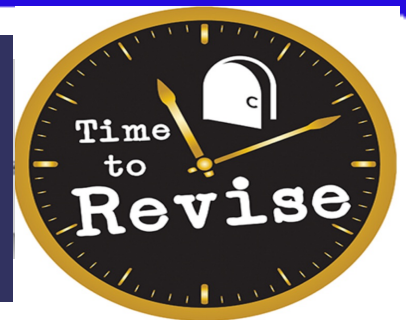
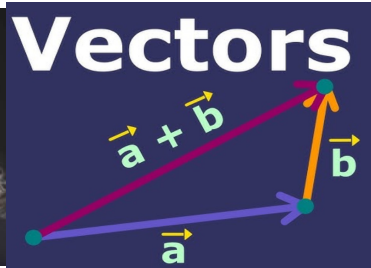
Sequences & Series

proof by contradiction

$$S_n = \frac{a_1(1-r^n)}{1-r}$$



Integration is an art.

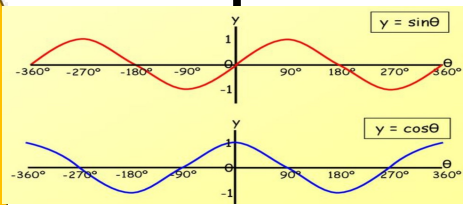


Exponential & Logarithms



$$(a + b)^n = \sum_{r=0}^n C(n,r) a^{n-r} b^r$$

The Binomial theorem

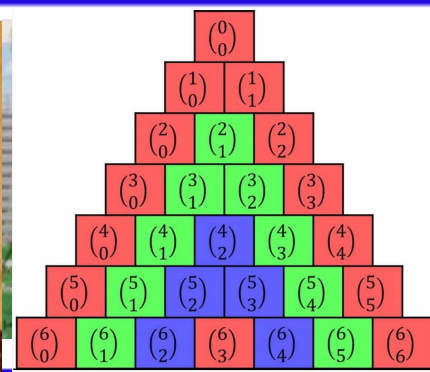
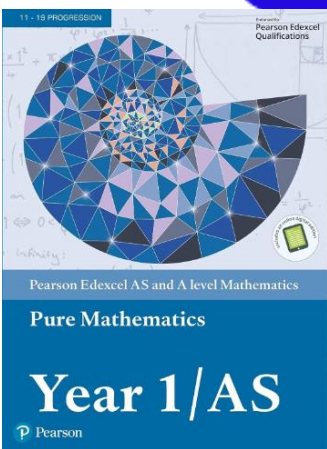


Differentiation

Binomial Expansion

Trigonometric identities & equations

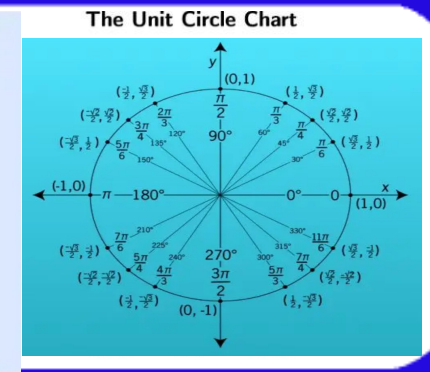
Trigonometric ratios



Quotient Identities

$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

$$\cot \theta = \frac{\cos \theta}{\sin \theta}$$

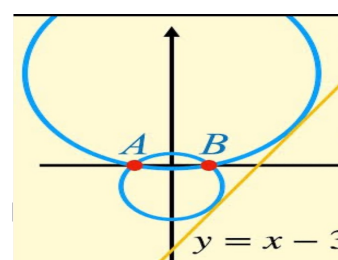


Algebraic methods

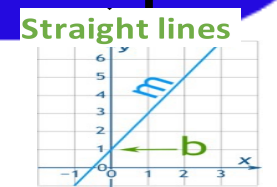
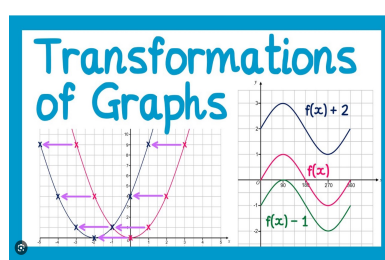
$$\begin{array}{r} \text{Quotient } Q(x) \\ x - 5 \overline{) x^2 - 4x - 3} \\ \underline{x^2 - 5x} \\ -5x - 3 \\ \underline{-5x - 5} \\ 2 \end{array}$$

2 ← Remainder R(x)

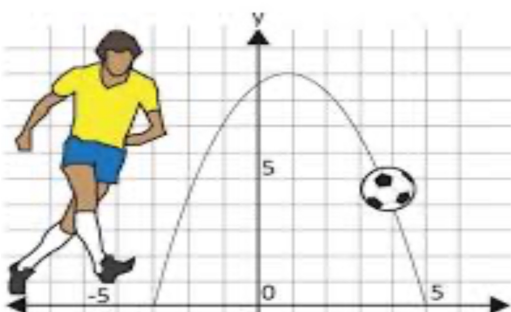
Circles



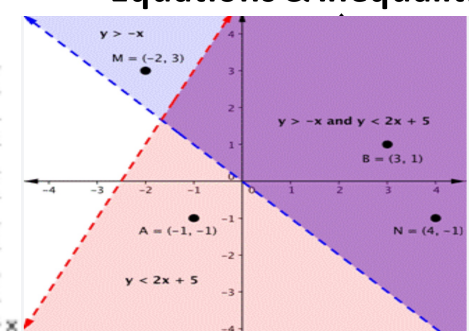
Graphs & transformations



Quadratics



Equations & Inequalities



Algebraic expressions

$$2^3 = 8 \quad \left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n \quad a^0 = 1$$

$$\frac{a^m}{a^n} = a^{m-n} \quad a^{-n} = \frac{1}{a^n} \quad a \times \frac{1}{a} = 1$$

$$(ab)^n = a^n \times b^n \quad \left(\frac{a}{b}\right)^n = \frac{a^n}{b^n} \quad a^m \times a^n = a^{m+n}$$