



Year 12 / AS

Weekly Tutorial 02

mathsalphacom

1. Find the values of k such that the equation. $k = kx^2 - 3x + 2k = 0$ has no real roots.
2. $x^2 - 2(a + 1)x + 3a = 0$
Describe the nature of roots of above quadratic equation for different values of a .
3. Find the range of values of k such that,
 $2x^2 - 4x + (3k - 2) > 0$
4. Find the range of values of k such that, $3x^2 - 2(k + 2)x + 3 = 0$ has real roots.
5. Simplify the following.
 - a) $\left(4x^{12} + \frac{17x^{12}}{27}\right)^{-\frac{2}{3}}$
 - b) $a^2 \left(3a^{-\frac{1}{4}}\right)^4$
6. Solve.
 - a) $2x^2 - (2\sqrt{3} + 3)x + 3\sqrt{3} > 0$
 - b) $x^2 + 3x - 1 \leq 0$
7.
 - a) Write $x^2 + 5x + 15$ in the form $(x + a)^2 + b$. Where a and b are real constants.
 - b) Hence, or otherwise find the maximum value of $\frac{1}{x^2 + 5x + 15}$
8. $f(x) = -3x^2 + 2x + 30$
Find the minimum value of $\frac{5}{f(x)}$.