

Essential Skills 33

The skills in this series of worksheets appear frequently.

These are the GIFTS you must take to succeed

Using the Discriminant



Find the value(s) of k given that each equation has equal roots:

1. $x^2 - 8x + k = 0$
2. $x^2 + kx + 16 = 0$
3. $kx^2 - 12x + 9 = 0$
4. $x^2 + 2kx + 9 = 0$
5. $x^2 + (k + 1)x + 9 = 0$
6. $(k + 1)x^2 - 2(k + 3)x + 3k = 0$
7. $x^2 + (x + k)^2 - 8 = 0$
8. $x^2 + (kx - 5)^2 = 9$
9. $kx^2 + (2k + 1)x + k = 0$
10. $(7 + 2k)x^2 + kx + k = 0$

APPLYING QUESTIONS



1. The line $y = x + k$ is a tangent to the parabola $y = x^2 - 3x$.
Find the value of k .
2. Given that $\frac{x^2+4x+10}{2x+5} = k$, form a quadratic equation in x and find the range of values of k for which it has 2 real and distinct roots.
3. Show that, if k is a real number, the roots of the equation $kx^2 + 3x - 3 = 2kx$ are always real.