Quadratic Factorisation

1. $6x^2 - 13x - 5$. $\boxed{(3x+1)(2x-5)}$
2. $6x^2 - 11x - 2$. $\boxed{(x-2)(6x+1)}$
3. $4x^2 + 8x - 21$. $\boxed{(2x+7)(2x-3)}$
4. $16x^2 - 9$. $\boxed{(4x-3)(4x+3)}$
5. $8x^2 + 6x - 5$. $\boxed{(4x+5)(2x-1)}$
6. $10x^2 + 63x + 18$. $\boxed{(10x+3)(x+6)}$
7. $7x^2 - 14x$. $\boxed{7x(x-2)}$
8. $6x^2 - 25x - 9$. $\boxed{(3x+1)(2x-9)}$

Harder Factorisation

1. $6x^2 + 11xy + 4y^2$. $\boxed{(2x+y)(3x+4y)}$
2. $x^3 - x^2 - x - 2$. $\boxed{(x^2+x+1)(x-2)}$
3. $4x^3 + 4x^2 - 5x - 3$. $\boxed{(2x+1)(2x+3)(x-1)}$
4. $ab + 3ac + b^2 + bc - 6c^2$. $\boxed{(a+b-2c)(b+3c)}$
5. $x^4 + 2x^3 + 4x^2 + 2x + 3$. $\boxed{(x^2+1)(x^2+2x+3)}$

Solving Equations

By putting the equations equal to zero and factorising, solve the following equations for x.

1. $x^2 + 3x + 2 = 0$. $\boxed{x = -1 \text{ or } x = -2}$
2. $2x^2 + 7x = 4$. $\boxed{x = \frac{1}{2} \text{ or } x = -4}$
3. $10x^2 + 20x = 150$. $\boxed{x = 3 \text{ or } x = -5}$
4. $2x^2 = x$. $\boxed{x = 0 \text{ or } x = \frac{1}{2}}$
5. $4x^2 = 9$. $\boxed{x = \frac{3}{2} \text{ or } x = -\frac{3}{2}}$
6. $x - 100x^2 = x - 1$. $\boxed{x = \frac{1}{10} \text{ or } x = -\frac{1}{10}}$
7. $28x^2 + 1 = 13x + 7$. $\boxed{x = -\frac{2}{7} \text{ or } x = \frac{3}{4}}$
8. $x^2 = r^2$. $\boxed{x = r \text{ or } x = -r}$
9. $x^2 + ax = 2a^2$. $\boxed{x = a \text{ or } x = -2a}$
10. $x(3x^2 + 14x - 5) = 0$. $\boxed{x = 0 \text{ or } x = -5 \text{ or } x = \frac{1}{3}}$
11. $x^2 + 7r^2 = 8rx$. $\boxed{x = r \text{ or } x = 7r}$
12. $2x^2 + 4xz = xy + 2yz$. $\boxed{x = -2z \text{ or } x = \frac{y}{2}}$

13. $(x+2)(x^2-2x-15)=0$. $\boxed{x=-2 \text{ or } x=-3 \text{ or } x=5}$

14. $x^3+5x^2-22x+16=0$. $\boxed{x=1 \text{ or } x=2 \text{ or } x=-8}$

15. $x^3+6x^2=13x+42$. $\boxed{x=-2 \text{ or } x=3 \text{ or } x=-7}$