Advanced Algebra
Polynomial Functions: Quadratic Equations – Homework

Solve the following polynomial equations by factoring and using the quadratic formula.

1) $r^2 - 4r = 0$
2) $6w^2 - 2w - 1 = 0$
3) $9u^2 - 24u + 16 = 0$
4) $x^2 - 9x + 18 = 0$
5) $5w^2 - 2w + 4 = 0$
6) $12x^2 - x - 6 = 0$
7) $10y^2 - 9y = 0$
8) $25x^2 + 4 = 0$
9) $3d^2 + 24d + 45 = 0$
10) $n^2 - 3n - 40 = 0$
11) $2x^4 - 5x^3 + 3x^2 = 0$
12) $12m^3 - 8m^2 - 15m = 0$

Find the vertex for each of the following parabolas by completing the square:

13) $y = 3x^2 - 6x + 2$
14) $y = d^2 + d - 5$
15) $y = 2x^2 - 8x + 1$
16) $y = 3a^2 + a - 2$

Write a quadratic equation with integer coefficients that would have the following solutions:

17) 2 and -5
18) 3 and $\frac{1}{2}$
19) 3i and -3i
20) 2-5i and 2+5i