Intermediate Algebra Skill

Solving Quadratic Form Equations: Substituting a Variable for a Quantity

Solve the following equations:

1) $\left(n^2+2n\right)^2-14\left(n^2+2n\right)-15=0$

2) $\left(n^2-3n\right)^2-8\left(n^2-3n\right)-20=0$

3) $\left(2u^2-u\right)^2-4\left(2u^2-u\right)+3=0$

4) $\left(3u^2+2u\right)^2-13\left(3u^2+2u\right)+40=0$

5) $6\left(3p+2\right)^2-7\left(3p+2\right)-20=0$

6) $12\left(2p-1\right)^2+13\left(2p-1\right)+3=0$

7) $\left(3+\sqrt{x}\right)^2+3\left(3+\sqrt{x}\right)-10=0$

8) $\left(1+\sqrt{x}\right)^2-5\left(1+\sqrt{x}\right)+6=0$

9) $\left(3-\sqrt{x}\right)^2-10\left(3-\sqrt{x}\right)+23=0$

10) $\left(5+\sqrt{x}\right)^2-14\left(5+\sqrt{x}\right)+33=0$

11) $\left(x-\dfrac{6}{x}\right)^2-6\left(x-\dfrac{6}{x}\right)+5=0$

12) $\left(x-\dfrac{18}{x}\right)^2-4\left(x-\dfrac{18}{x}\right)-21=0$

13) $\left(1-\dfrac{1}{y-1}\right)^2+2\left(1-\dfrac{1}{y-1}\right)-15=0$

14) $\left(1+\dfrac{1}{y+2}\right)^2-6\left(1+\dfrac{1}{y+2}\right)+8=0$

Answers to Solving Quadratic Form Equations: Substituting a Variable for a Quantity

1) $-5, 3, -1$

2) $5, -2, 1, 2$

3) $-\dfrac{1}{2}, -1, 1, \dfrac{3}{2}$

4) $-\dfrac{5}{3}, -2, 1, \dfrac{4}{3}$

5) $-\dfrac{10}{9}, \dfrac{1}{6}$

6) $\dfrac{1}{3}, \dfrac{1}{8}$

7) $\varnothing$

8) $\pm 1, \pm\sqrt{2}$

9) $\varnothing$

10) $\pm\sqrt{6}$

11) $-2, -1, 3, 6$

12) $-6, -2, 3, 9$

13) $\dfrac{7}{6}, \dfrac{1}{2}$

14) $-\dfrac{5}{3}, -1$