Factoring Review

Factor and Solve Polynomials Practice Name: KEY

Factor Completely.

1. $5a^2 - 15$

$5(a^2-3)$

2. $6xy^2 - 3xy + 8y - 4$

$3xy(2y-1) + 4(2y-1)$

$(3xy+4)(2y-1)$

3. $2y^3 - 6xy^2 + 8x^2y$

$2y(y^2 - 3xy + 4x^2)$

$2y(y^2 - 3xy + 4x^2)$

$4x^2$: $1x, 4x$; $2x, 2x$; $-1x, -4x$; $-2x, -2x$

4. $6n^2 - 13n + 6$

$a \cdot c = 36$

$6n^2 - 9n - 4n + 6$

~~$3n(2n-3) - 3(n-3)$~~

$-1, -36$; $-2, -18$; $-3, -12$; $-4, -9$

$3n(2n-3) - 2(n-3)$

$(3n-2)(2n-3)$

5. $x^2 + 3x + 2$

2: $1, 2$

$(x+2)(x+1)$

6. $x^2 - 14x + 40$

40: $-1, -40$; $-2, -20$; $-4, -10$

$(x-4)(x-10)$

7. $6x^2 - 17x - 3$

-18: $+1, -18$; $-1, 18$

$6x^2 + x - 18x - 3$

$x(6x+1) - 3(6x+1)$

$(x-3)(6x+1)$

8. $2a^2 + 8ab - 3a - 12b$

$2a(a+4b) - 3(a+4b)$

$(a+4b)(2a-3)$

9. $2x^2 - 3x - 20$

-40: $-1, 40$; $1, -40$; $-2, 20$; $2, -20$; $-4, 10$; $4, -10$; $-5, 8$; $5, -8$

$2x^2 + 5x - 8x - 20$

$x(2x+5) - 4(2x+5)$

$(x-4)(2x+5)$

10. $x^2 - 12x - 64$

-64: $1, -64$; $2, -32$; $4, -16$

$(x+4)(x-16)$

11. $6mn - 9m - 4n + 6$

$-9m + 6mn - 4n + 6$

$-3m(3 + {}^{-}2n) - 2(2n-3)$

$3m(2n-3) - 2(2n-3)$

$(3m-2)(2n-3)$

12. $75b^2c^3 + 60bc^6$

$15bc^3(5b + 4c^3)$

Solve the equation.

13. $3x^2+2x-8=0$

-24: $-1, 24$; $-2, 12$; $-3, 8$; $-4, 6$

$3x^2-4x+6x-8=0$

$x(3x-4)+2(3x-4)=0$

$(3x-4)(x+2)=0$

$3x-4=0$ $+4\ +4$ / $\frac{3x}{3}=\frac{4}{3}$; $x+2=0$ $-2\ -2$

$x=4/3, -2$

14. $2x^2-3x=0$

$x(2x-3)=0$

$x=0$

$2x-3=0$ $+3\ +3$ / $\frac{2x}{2}=\frac{3}{2}$

$x=\frac{3}{2}$

$x=0, \frac{3}{2}$

15. $x^3+5x^2-9x-45=0$

$x^2(x+5)-9(x+5)=0$

$(x^2-9)(x+5)=0$

$x^2-9=0$ $+9\ +9$ / $\sqrt{x^2}=\sqrt{9}$

$x=\pm 3$

$x+5=0$ $-5\ -5$

$x=-5$

$x=\pm 3, -5$

16. $x^2+20=-9x$

$x^2+20+9x=0$

$x^2+9x+20=0$

20: $1, 20$; $2, 10$; $4, 5$

$x^2+5x+4x+20=0$

$x^2+5x+4x+20=0$

$x(x+5)+4(x+5)=0$

$(x+5)(x+4)=0$

$x=-5, -4$

17. $4z^3-32z^2-5z=-40$ $+40\ +40$

$4z^3-32z^2-5z+40=0$

$4z^2(z-8)-5(z-8)=0$

$(z-8)(4z^2-5)=0$

$z-8=0$ $+8\ +8$

$z=8$

$4z^2-5=0$ $+5\ +5$ / $\frac{4z^2}{4}=\frac{5}{4}$

$z^2=\frac{5}{4}$

$z=\sqrt{\frac{5}{4}}\approx 1.12$

18. $6z^2=18z$

$6z^2-18z=0$

$6z(z-3)=0$

$\frac{6z}{6}=\frac{0}{6}$ / $z=0$

$z-3=0$ $+3\ +3$

$z=3$

$z=0, 3$

19. $15c+30c^2=0$

$15c(1+2c)=0$

$\frac{15c}{15}=\frac{0}{15}$ / $c=0$

$1+2c=0$ $-1\ -1$ / $\frac{2c}{2}=\frac{-1}{2}$

$c=-\frac{1}{2}$

$c=0, -\frac{1}{2}$

20. $-25k-75+k^3=-3k^2$

$-25k-75+k^3+3k^2=0$

$k^3+3k^2-25k-75=0$

$k^2(k+3)-25(k+3)=0$

$(k^2-25)(k+3)=0$

$k^2-25=0$ $+25\ +25$ / $\sqrt{k^2}=\sqrt{25}$

$k=\pm 5$

$k+3=0$ $-3\ -3$

$k=-3$

$k=\pm 5, -3$

21. $5x^2+22x=15$ $-15\ -15$

$5x^2+22x-15=0$

-75: $-1, 75$; $-3, 25$; $-5, 15$

$5x^2-3x+25x-15=0$

$x(5x-3)+5(5x-3)=0$

$(x+5)(5x-3)=0$

$x+5=0$ $-5\ -5$

$x=-5$

$5x-3=0$ $+3\ +3$ / $\frac{5x}{5}=\frac{3}{5}$

$x=\frac{3}{5}$

$x=-5, \frac{3}{5}$