

Feb 13

Trinomials 2 - Factoring

ex 1) $2x^2 + 5x + 3$

$(2)(3) = 6$
3 2

$(2x^2 + 2x) + (3x + 3)$

$2x(x + 1) + 3(x + 1)$

$(x + 1)(2x + 3)$

ex 2) $6x^2 - x - 2$

step 1: Multiply first and last number
Find the factors of -12 that add up to -1

$(6)(-2) = -12$
-4 3

step 2: rewrite middle term using the 2 factors

$6x^2 - x - 2$

$6x^2 + 3x - 4x - 2$

step 3: greatest common factor two times

$\frac{6x^2 + 3x}{3x \ 3x}$

$\frac{6x^2 + 3x}{\text{common factor}} - \frac{4x - 2}{\text{common factor}}$

$3x(2x + 1) - 2(2x + 1)$

$\frac{3x(2x + 1)}{\text{common factor again}} - \frac{2(2x + 1)}{\text{common factor again}}$

$= (2x + 1)(3x - 2)$

ex 3) $8x^2 + 10x + 3$

$$\begin{aligned} & (8x^2 + 6x) + (4x + 3) \\ & 2x(4x + 3) + 1(4x + 3) \\ & (4x + 3)(2x + 1) \end{aligned}$$

$$\begin{array}{r} (8)(3) = 24 \\ \begin{array}{r} 6 \quad 4 \\ \times \quad \times \\ \hline 10 \end{array} \end{array}$$

ex 4) $4x^2 - 9x - 9$

$$\begin{aligned} & (4x^2 - 12x) + (3x - 9) \\ & 4x(x - 3) + 3(x - 3) \\ & (x - 3)(4x + 3) \end{aligned}$$

$$\begin{array}{r} (4)(-9) = -36 \\ \begin{array}{r} \swarrow \quad \searrow \\ +3 \quad -12 \end{array} \end{array}$$

ex 5) $9x^2 + 3x - 2$

$$\begin{aligned} & (9x^2 - 3x) + (6x - 2) \\ & 3x(3x - 1) + 2(3x - 1) \\ & (3x - 1)(3x + 2) \end{aligned}$$

$$\begin{array}{r} (9)(-2) = -18 \\ \begin{array}{r} \swarrow \quad \searrow \\ +6 \quad -3 \end{array} \end{array}$$

Blue WS

Trinomials 1 Worksheet

1. $x^2 + 6x + 5 = (x+5)(x+1)$
2. $t^2 + 9t + 14 = (t+7)(t+2)$
3. $m^2 + 9m + 20 = (m+5)(m+4)$
4. $x^2 + 6x + 5 = (x+5)(x+1)$
5. $x^2 + 4x + 4 = (x+2)^2$
6. $y^2 - 3y + 2 = (y-2)(y-1)$
7. $k^2 - 5k + 6 = (k-3)(k-2)$
8. $x^2 - 7x + 12 = (x-4)(x-3)$
9. $b^2 - 8b + 12 = (b-6)(b-2)$
10. $x^2 - 2x - 24 = (x-6)(x+4)$
11. $x^2 - 2x - 35 = (x-7)(x+5)$
12. $n^2 + 5n - 24 = (n+8)(n-3)$
13. $y^2 - 4y - 21 = (y-7)(y+3)$
14. $a^2 - 6a + 9 = (a-3)^2$
15. $x^2 - 2x + 1 = (x-1)^2$
16. $k^2 - 15k + 56 = (k-7)(k-8)$
17. $y^2 + 14y + 48 = (y+6)(y+8)$
18. $x^2 - 5x - 14 = (x-7)(x+2)$
19. $w^2 - 5w - 50 = (w-10)(w+5)$
20. $u^2 + 4u - 45 = (u+9)(u-5)$
21. $x^2 + 10x + 21 = (x+7)(x+3)$
22. $r^2 - 14r + 48 = (r-6)(r-8)$
23. $x^2 - 7x + 6 = (x-6)(x-1)$
24. $d^2 - 5d - 24 = (d-8)(d+3)$
25. $x^2 - 8x - 33 = (x-11)(x+3)$
26. $c^2 - c - 30 = (c-6)(c+5)$
27. $x^2 - 3x - 28 = (x-7)(x+4)$
28. $x^2 + 8x + 16 = (x+4)^2$
29. $b^2 - b - 72 = (b-9)(b+8)$
30. $m^2 - 14m + 45 = (m-9)(m-5)$

Trinomials 1 with Coefficients Worksheet

31. $2x^2 + 6x - 20 = 2(x+5)(x-2)$
32. $3m^2 - 3m - 60 = 3(m-5)(m+4)$
33. $4y^2 - 36y + 56 = 4(y-7)(y-2)$
34. $5t^2 - 15t + 10 = 5(t-2)(t-1)$
35. $2r^2 + 2r - 24 = 2(r+4)(r-3)$
36. $x^3 + x^2 - 30x = x(x^2 + x - 30)$
 $= x(x+6)(x-5)$
37. $3t^3 + 6t^2 - 9t = 3t(t+3)(t-1)$
38. $cx^2 - 5cx - 6c = c(x-6)(x+1)$
39. $2x^3 - 10x^2 - 28x = 2x(x^2 - 5x - 14)$
 $= 2x(x-7)(x+2)$
40. $x^3 + x^2 - 30x = x(x^2 + x - 30)$
 $= x(x+6)(x-5)$
41. $3a^2 + 3a - 36 = 3(a^2 + a - 12)$
 $= 3(a+4)(a-3)$
42. $5n^2 + 45n - 110 = 5(n^2 + 9n - 22)$
 $= 5(n+11)(n-2)$
43. $7x^2 - 77x + 168 = 7(x^2 - 11x + 24)$
 $= 7(x-8)(x-3)$
44. $2b^2 - 26b - 96 = 2(b^2 - 13b - 48)$
 $= 2(b-16)(b+3)$
45. $2pm^2 - 8mp + 6p = 2p(m^2 - 4m + 3)$
 $= 2p(m-3)(m-1)$
46. $3f^2 - 6f - 45 = 3(f^2 - 2f - 15)$
 $= 3(f-5)(f+3)$