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Feb 11 Factoring Review Solution

(1) $x^2 - 14x + 24$

$= (x-2)(x-12)$

$\cancel{\sqrt{24}}$

$ac = 1 \times 24 = 24$ — $(-2)\times(-12)$

$b = -14$

(2) $49x^2 - 144$

$= (7x)^2 - (12)^2$

$= (7x+12)(7x-12)$

$a = 7x$

$b = 12$

(3) $x^2 + 7x + 10$ HT $ac = 1 \times 10 = 10 \rightarrow 5 \times 2$

$= (x+5)(x+2)$

$b = 7$

(4) $x^2 - 18x - 81 \rightarrow \cancel{a^2 + 2ab + b^2}$

$\cancel{a^2 - 2ab + b^2}$

Not factorable

HT : $ac = 1 \times -81 = -81$

$b = -18$

1

9×-9

3×-27

81×1

(5) $25x^2 - 120x + 144$

$= (5x)^2 - (2 \cdot 5x \cdot 12) + 12^2$

$a^2 \quad - 2ab \quad b^2$

$= (5x - 12)^2$

$a = 5x$

$b = 12$

(6) $49x^2 - 1$

$= (7x)^2 - 1^2$

$= (7x+1)(7x-1)$

$a = 7x$

$b = 1$

7) $25x^2 - 144$ $\quad a = 5x$

$= (5x)^2 - (12)^2$ $\quad b = 12$

$= (5x+12)(5x-12)$

(8) $x^2 + 2x + 1$ $\quad a = x$

$= x^2 + (2 \cdot x \cdot 1) + 1^2$ $\quad b = 1$

$= (x+1)^2$

(9) $x^2 - 14x + 33$ $\quad$ H.T.

$ac = 1 \times 33 = 33$

$= (x-11)(x-3)$ $\quad b = -14$ $\quad (-11) \times (-3)$

(10) $x^2 - 81$ $\quad a = x$

$= x^2 - 9^2$ $\quad b = 9$

$= (x+9)(x-9)$

(11) $x^2 - 23x + 132$ $\quad$ H.T

$ac = 1 \times 132 = 132$

$= (x-11)(x-12)$ $\quad b = -23$ $\quad (-11) \times (-12)$

(12) $x^2 - 144$ $\quad a = x$

$= x^2 - 12^2$ $\quad b = 12$

$= (x+12)(x-12)$

(13) $81x^2 + 100$

Not factorable

Feb 11 Factoring Review

#14. $x^2 - 8x + 7$

$ac = 1 \times 7 = 7 \longrightarrow (-1) \times (-7)$

$b = -8$

$= (x-1)(x-7)$

#15. $36x^2 + 60x + 25$

Pefect Square

$a = 6x$

$b = 5$

$= (6x)^2 + (2 \cdot 6x \cdot 5) + (5)^2$

$= (6x+5)^2$

#16. $3a^2 + 6a$

$= 3a(a+2)$

#17. $2x - 8xy$

$= 2x(1-4y)$

#18. $25a^2 - 9$

perfect square $a^2 - b^2$

$= (5a)^2 - 3^2$

$= (5a+3)(5a-3)$

#19. $x^2 + 7x + 12$

$ac = 1 \times 12 = 12 \rightarrow 4 \times 3$

$b = 7$

$= (x+4)(x+3)$

#20. $y^2 - 11y + 28$

$ac = 1 \times 28 = 28 \longrightarrow (-7) \times (-4)$

$b = -11$

$= (y-7)(y-4)$

#21. $16a^2 - 18a + 1$

$ac = 16 \longrightarrow$ No two integers can satisfy both conditions.

$b = -18$

$\therefore$ Not factorable

22. $x^2 + 6x + 8$ $\quad ac = 8 \rightarrow 4 \times 2$

$b = 6$

$= (x+4)(x+2)$

23. $5b^2 - 14b + 8$ $\quad ac = 5 \times 8 = 40$ — 10×4 (X)

$b = -14b$ $\quad (-10) \times (-4)$

$= 5b^2 - 10b - 4b + 8$

$= 5b(b-2) - 4(b-2)$

$= (b-2)(5b-4)$

24. $10x^2 - 28x + 16$ $\quad$ ~~ac~~

$= 2(5x^2 - 14x + 8)$ $\quad ac = 5 \times 8 = 40$ — $(-4) \times (-10)$

$b = -14$

$= 2(5x^2 - 10x - 4x + 8)$

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

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

25. $3d^2 - 432$

$= 3(d^2 - 144)$ $\quad a = d$

$b = 12$

$= 3(d^2 - 12^2)$

$= 3(d+12)(d-12)$

26. $6d^2 + 5d + 1$ $\quad ac = 6 \rightarrow 2 \times 3$

$b = 5$

$= 6d^2 + 2d + 3d + 1$

$= 2d(3d+1) + (3d+1)$

$= (3d+1)(2d+1)$

Feb 11 Factoring Review HW Solution

27. $56c^2 + 9c - 2$

$ac = 56 \times -2 = -112$ — $(-7) \times 16$, -4×28, -8×14 $(\times)$

$b = 9$

$= 56c^2 + 16c - 7c - 2$

$= 7c(8c - 1) + 2(8c - 1)$

$= (8c - 1)(7c + 2)$

28. $2g^2 - 2g - 24$

$= 2(g^2 - g - 12)$

$ac = -12 \rightarrow -4 \times 3$

$b = -1$

$= 2(g - 4)(g + 3)$

29. $-16 + 9x^2$

$a = 3x$ $\quad a^2 - b^2$

$b = 4$

$= (3x)^2 - 4^2$

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

30. $x^2y^3z - 2xy^2$

$=$ CF: xy^2

$= xy^2(xyz - 2)$

31. $4x^4 + 24x^2 + 9$

$ac = 4 \times 9 = 36$

$b = 24$

$=$ Not factorable

32) $4x^4 + 24x^2 + 9$

$ac = 4 \times 9 = 36$

$b = 24$

Not factorable

33) $8x^2 - 50$

$= 2(4x^2 - 25)$

$= 2((2x)^2 - 5^2)$

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