Extra Factoring Practice Feb 12 MPM2D

1) $6m^3 - 10m^2t + 6mt^2$

$= 2m(3m^2 - 5mt + 3t^2)$ HT $ax^2 + bx + c$

$a = 3 \quad b = -5t \quad c = 3t^2$

$ac = 3 \times 3t^2 = 9t^2 \qquad b = -5t$

$= 2m(3m^2 - 5mt + 3t^2)$

2) $x^6 - x^5 + x^4 - x^3 + x^2$

x^2

$= x^2(x^4 - x^3 + x^2 - x + 1)$

3) $5m(2m+1) - 4(2m+1)$

$= (2m+1)(5m-4)$

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

$= x^2(x-y) + y^2(x-y)$

$= (x^2+y^2)(x-y)$

5) $x^2 + 7x + 10$ $\quad a=1,\ c=10,\ b=7$

$ac = 1 \times 10 = 10 \longrightarrow 5 \times 2$

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

6) $w^2 - 13w + 42$ $\quad a=1,\ c=42,\ b=-13$

$= (w-6)(w-7)$ $\quad ac = 42 \rightarrow (-6) \times (-7)$

7) $3q^2 - 6q - 45$

$a=1,\ b=-2,\ c=-15$

$= 3(q^2 - 2q - 15)$ $\quad ac = -15 \rightarrow (-5) \times 3$

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

8) $x^2 + xy - 12y^2$ HT $\rightarrow a=1,\ b=y \quad c=-12y^2$

$(4y) \times (-3y)$

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

9) $6x^2 - 7x - 20$ HT $\quad a=6,\ b=-7,\ c=-20$

$ac = 6 \times -20 = -120$

$= 6x^2 + 8x - 15x - 20$

$(8) \times (-15)$

$= \quad +4) - 15(x-4$

10) $6m^2 - 7m - 3$ HT $\quad a=6,\ b=-7,\ c=-3$

$ac = 6 \times -3 = -18$

$= 6m^2 - 9m + 2m - 3$ $\quad b = -7$

$(-9) \times 2$

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

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

Extra Factoring Practice (2) Feb 12

11.) $3m^2 - 19m - 20$ $\quad ac = 3 \times -20 = -60 \rightarrow 3 \times (-20)$

$b = -19$ $\quad \cancel{4 \times 15}$

$=$ Not factorable

12) $6x^2 - 27x - 15$

$= 3(2x^2 - 9x - 5)$ $\quad ac = 2 \times -5 = -10$ $\quad b = -9$

$= 3(2x^2 - 10x + x - 5)$ $\quad (-10) \times 1$

$= 3(2x(x-5) + (x-5))$

$= 3((x-5)(2x+1))$

$= 3(x-5)(2x+1)$

13) $6x^2 + 17xy + 5y^2$ $\quad ac = 6 \times 5y^2 = 30y^2 \rightarrow 15y \times 2y$

$b = 17y$

$= 6x^2 + 15xy + 2xy + 5y^2$

$= 2x(3x+y) + 5y(3x+y)$

$= (3x+y)(2x+5y)$

14) $4x^4 + 35x^2 + 49$ $\quad ac = 4 \times 49 = 196$

$= 4x^4 + 28x^2 + 7x^2 + 49$ $\quad b = 35$ $\quad 14 \times 14$ (X)

7×28 ✓

$= 4x^2(x^2+7) + 7(x^2+7)$

$= (x^2+7)(4x^2+7)$

15) $8x^2 + 38x + 45$

$ac = 8 \times 45 = 360$

$b = 38$

$\therefore$ Not factorable

16) $42 + t - 56t^2$

not going to be on the test

17) $10x^2 - 11x + 3$

$ac = 10 \times 3 = 30 \rightarrow (-5) \times (-6)$

$b = -11$

$= 10x^2 - 5x - 6x + 3$

$= 5x(2x-1) - 3x(2x-1)$

$= (5x - 3x)(2x - 1)$

18) $x^2 - 121$

$a = x$

$= x^2 - 11^2$

$b = 11$

$= (x+11)(x-11)$

19) $x^2 - 20x + 100 \longrightarrow$ Perfect Square

$= x^2 - 2(1)(10) + 10^2$

$a = x$

$b = 10$

$= (x-10)^2$

$-2ab = -20x$

20) $81x^2 - 18x + 1 \longrightarrow$ Perfect Square

$= (9x)^2 - (2 \cdot 9x \cdot 1) + 1^2$

$a = 9x$

$= (9x-1)^2$

$b = 1$

Extra Factoring (3)

21) $x^4 - 1$ $\quad a = x^2$ $\quad$ Differences of square

$b = 1$

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

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

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

22) $7x^2 - 343$

$= 7(x^2 - 49)$

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

23) $18x^2 + 12x + 8$

$= 2(9x^2 + 6x + 4)$ $\quad ac = 4 \times 9 = 36$

$b = 6$

$\downarrow$

Done.

26) $x^2 - 3x - 40$ $\quad ac = 1 \times -40 = -40 \rightarrow -8 \times 5$

$b = -3$

$= (x-8)(x+5)$

27) $2x^2 - 2x - 24$

$= 2(x^2 - x - 12)$ $\quad ac = -12 \rightarrow (-4) \times 3$

$b = -1$

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