Practice Test #3 (Key)

① Simplify: $(2x^3y^4)(-4x^2y^3) = -8x^5y^7$

② Simplify: $\dfrac{12a^3b^4c^2}{16a^5b^2c^5} = \dfrac{3b^2}{4a^2c^3}$

③ Simplify: $(3a^3b)^3 = 27a^9b^3$

④ Simplify: $(2.4 \times 10^3)(5.2 \times 10^6) = 12.48 \times 10^9$

$= 1.248 \times 10^{10}$

⑤ Simplify: $(5x^2 + 8x - 5) - (2x^2 - 4x - 8) = 3x^2 + 12x + 3$

⑥ Simplify: $(2x-5)(3x^2-2x+5) = 6x^3-4x^2+10x-15x^2+10x-25$

$= 6x^3-19x^2+20x-25$

⑦ Factor completely: $4x^3y^2-8x^2y+12x^2y^2-10xy$

$= 2xy(2x^2y-4x+6xy-5)$

⑧ Factor: $x^2-2x-15 = (x-5)(x+3)$

⑨ Factor: $9x^2-16 = (3x+4)(3x-4)$

⑩ Factor: $3x^3+3x^2-60x = 3x(x^2+x-20)$

$= 3x(x+5)(x-4)$

(11) Factor: $6x^2 - 4xy + 15x - 10y =$

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

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

(12) Solve: $x^2 - 5x - 14 = 0$

$(x-7)(x+2) = 0$

$x-7=0$ $\quad$ $x+2=0$

$\boxed{x=7}$ $\quad$ $\boxed{x=-2}$

(13) Solve: $x^2+10x+4 = 4x+20$

$-4x \quad -20 \quad -4x \quad -20$

$x^2+6x-16=0$ $\quad$ $x+8=0$ $\quad$ $x-2=0$

$(x+8)(x-2)=0$ $\quad$ $\boxed{x=-8}$ $\quad$ $\boxed{x=2}$

(14) Solve: $25x^2 + \cancel{4x} + 20 = \cancel{4x} + \cancel{36}$

$-\cancel{4x} \quad -36 \quad -\cancel{4x} \quad -\cancel{36}$

$25x^2 - 16 = 0$

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

$5x+\cancel{4}=0$ $\quad$ $5x-4=0$

$-\cancel{4} \quad -4$ $\quad$ $+4 \quad +4$

$\frac{\cancel{5}x}{\cancel{5}} = \frac{-4}{5}$ $\quad$ $\boxed{x=\frac{-4}{5}}$ $\quad$ $\frac{\cancel{5}x}{\cancel{5}} = \frac{4}{5}$

$\boxed{x = 4/5}$

(15) Simplify: $(3x-4)^2 = (3x-4)(3x-4)$

$= 9x^2 - 12x - 12x + 16$

$= 9x^2 - 24x + 16$

(16) Write 4,250,000 in scientific notation.

4.25×10^6

(17) Evaluate: $2x^2 - 4x + 3$ when $x = -4$

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

$= 2(16) + 16 + 3$

$= 32 + 16 + 3 = \boxed{51}$

(18) Factor: $x^2 + 19x + 90 = (x+9)(x+10)$