Perla Flores
MAT 1340

1.

Simplify: $5-2(3x-5)+7(2-3x)$

$5-6x+10+14-21x$

$$= -27x+29$$

2. Multiply:

A. $=3(2x^2)(2x+3)(6x-2)$

$=(6x^2)(12x^2-4x+18x-6)$

$= 6x^2(12x^2+14x-6)$

$$= 72x^4+84x^3-36x^2$$

B. $(3x-2)(2x^2-3x+7)$

$=6x^3-9x^2+21x-4x^2+6x-14$

$$=6x^3-13x^2+27x-14$$

Evaluate: $b^2 - 4ac$ if $a = 3, b = -7, \& c = 11$

$= -7^2 - 4(3)(11) = 49 - 132 = \boxed{-83}$

Always
Postive

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4. Write $\dfrac{2310}{660}$ **in lowest term:**

2, 3, 5, 7, 11, 13, 17, 19, 23

$$\frac{2310}{660} = \frac{2^2 \cdot 5^2 \cdot 23}{2^2 \cdot 3 \cdot 5 \cdot 11}$$

$$= \frac{5^1 \cdot 23}{3 \cdot 11} = \boxed{\frac{115}{33}}$$

2 | 2310
2 | 1150
5 | 575
5 | 115
  | 23

2 | 660
2 | 330
3 | 165
5 | 55
  | 11

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5. Simplify $\sqrt{37800}$ **without a Calculator:**

2 | 37800
2 | 18900
2 | 9450
3 | 4725
3 | 1575
3 | 525
5 | 175
5 | 35 = 7

$$= \sqrt{2^3 \cdot 3^3 \cdot 5^2 \cdot 7}$$
$$= 2^2 \cdot 2^1 \cdot 3^2 \cdot 5^2 \cdot 7$$
$$= 2 \cdot 3 \cdot 5 \sqrt{2 \cdot 7}$$
$$\boxed{= 30\sqrt{14}}$$

6. a. $x^2 + 3x - 10$

$-b = (-5)(-2)$ $2 \mid -5 + 2 = -3$

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

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

$= \boxed{(x-5)(x+2)}$

b.

$9x^2 - 16 = 3^2 x^2 - 4^2 = (3x)^2 - x^2$

$= \boxed{(3x-4)(3x+4)}$

$a^2 - b^2 = (a-b)(a+b)$

7. a. $\left(a^2 b^{-3}\right)\left(a^{-5} b^2\right) = a^{2-5} b^{-3+2} = a^{-3} b^{-1}$

$\boxed{= \dfrac{1}{a^3 b^1}}$

b. $\left(a^2 b^{-3}\right)^{-2} \left(a^{-5} b^2\right)^4$

$= \left(a^{2(-2)} b^{-3(-2)}\right)\left(a^{-5(4)} b^{2(4)}\right)$

$= \left(a^{-4} b^6\right)\left(a^{-20} b^8\right) = a^{-4-20} b^{6+8} = \boxed{\dfrac{b^{14}}{a^{24}}}$

c. $\dfrac{3^4 x^5 y^{-2}}{9 x^{-3} y^{-7}} = \dfrac{3^4 x^{5-(-3)} y^{-2-(-7)}}{3^2} = \dfrac{3^4 x^8 y^{-2+7}}{} =$

$$= \frac{3^2 x^8 y^5}{}$$

$$\boxed{= 9x^8 y^5}$$

d. $\dfrac{\left(6x^2 y^3\right)^{-2}}{\left(15 x^{-2} y^{-5}\right)} = \dfrac{6^{-2} x^{-4} y^{-6}}{15^4 x^{-8} y^{-20}} =$

$\dfrac{5^{-2} \cdot 2^{-2} x^{-4+8} y^{-6+20}}{3^4 \cdot 5^4} = \dfrac{x^4 y^{14}}{3^2 \cdot 5^4 \cdot 2^2} =$

$$\boxed{\dfrac{x^4 y^{14}}{22500}}$$

8. Consider the equation $ax^2 + bx + c = 0$

Discriminant is $b^2 - 4ac$ = what goes

under the radical in the quadratic

Formula.

$$\boxed{F(x) = ax^2 + bx + c}$$

9. $ax^2 + bx + c = 0$

$ -bx \qquad -bx$

$ax^2 + c = -bx$

$$\cancel{x} = -6$$

$$\frac{a\cancel{x^2}}{\cancel{x^2}} = \frac{-bx}{x^2} \frac{-c}{x^2}$$

$$a = \frac{-bx}{x^2} + \frac{-c}{x^2}$$

$$\boxed{a = -\frac{b}{x} - \frac{c}{x}}$$