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$(\frac{3}{8} - \frac{1}{5}) + \frac{2}{7} - \frac{1}{9}$

① Use Order of Operations

a) Simplify inside Grouping symbols
 (), [], { }, |a|, \sqrt{a} , $\frac{a}{b}$

b) Evaluating Exponents
 $5^3 = 5 \cdot 5 \cdot 5 = 125$

c) Multiplication or Division which ever comes first working from left to right.

d) Addition or Subtraction which ever comes first from left to right.

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$$\frac{3 \cdot 5 - 1 \cdot 8}{40} + \frac{2}{7} - \frac{1}{9}$$

$$\frac{15 - 8}{40} + \frac{2}{7} - \frac{1}{9}$$

$$\left(\frac{7}{40} + \frac{2}{7}\right) - \frac{1}{9}$$

$$\frac{77 + 2 \cdot 40}{280} - \frac{1}{9}$$

$$\frac{47 + 80}{280} - \frac{1}{9}$$

$$\frac{129}{280} - \frac{1}{9}$$

$$\frac{129 \cdot 9 - 1 \cdot 280}{2520}$$

$$\frac{1161 - 280}{2520}$$

$$\frac{881}{2520}$$

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$$\frac{\frac{6}{11} + \frac{1}{2}}{\frac{3}{4} - \frac{5}{8}} = \frac{\frac{12 + 11}{22}}{\frac{6 - 5}{8}}$$

$$= \frac{\frac{23}{22} \cdot \frac{8}{8}}{\frac{1}{8} \cdot \frac{8}{1}}$$

$$= \frac{92}{11}$$

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$$\frac{\frac{3}{y} + \frac{x}{y^2}}{\frac{1}{x^2} - \frac{2}{x}} = \frac{\frac{3y + x}{y^2}}{\frac{1 - 2x}{x^2}}$$

$\frac{y \cdot y}{y} = y$

$$= \frac{(3y + x) \cdot x^2}{y^2 \cdot (1 - 2x)}$$

$$= \frac{3yx^2 + x^3}{y^2 - 2xy^2}$$

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Prep for Algebra

#4) $3x + 6(2x - 3) = 4 - 7x$

$$3x + 12x - 18 = 4 - 7x$$

$$15x - 18 = 4 - 7x$$

$$+7x + 18 \quad +18 + 7x$$

$$\frac{22x}{22} = \frac{22}{22}$$

$$x = 1$$

ck
 $x = 1$

$$3(1) + 6(2(1) - 3) = 4 - 7(1)$$

$$3 + 6(-1) = 4 - 7$$

$$3 - 6 = -3$$

$$-3 = -3 \checkmark \text{ true!}$$

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#5)

$$\frac{5(y-4)}{3} = 2y - 2$$

$$\frac{3}{1} \left(\frac{5y-20}{3} - \frac{2y-2}{1} \right) \quad \text{LCD}=3$$

$$\frac{5y-20}{3} = \frac{6y-6}{3}$$

$$-5y + 6 \quad -5y + 6$$

$$\boxed{-14 = y}$$

$$\frac{5((-14)-4)}{3} = 2(-14) - 2$$

$$\frac{5(-18)}{3} = -28 + (-2)$$

$$-90/3 = -30$$

$$-30 = -30 \checkmark$$

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#6)

$$\frac{6x^{\ominus} \leftarrow \text{Exponent}}{x^2 \leftarrow \text{Base}} = 6x^{4-2}$$

$$\frac{6 \cdot \boxed{x} \cdot \boxed{x} \cdot x \cdot x \cdot x \cdot x}{\boxed{x} \cdot \boxed{x}}$$

$$\frac{6 \cdot 1 \cdot 1 \cdot x \cdot x \cdot x \cdot x}{6 \cdot x^4} = \frac{x \cdot x \cdot x \cdot x}{1}$$

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#7)

$$\frac{(x^2)^4 = x^8}{(3x)^3} = \frac{x^2 \cdot x^2 \cdot x^2 \cdot x^2}{x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x}$$

$$= \frac{x^8}{27x^3} = \frac{x^{8-3}}{27} = \frac{x^5}{27}$$

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#8)

$$1 \cdot (7x - 7) + 1 \cdot (11x - 3)$$

$$\boxed{7x} \ominus \boxed{7} \quad \boxed{+11x} \ominus \boxed{3}$$

Collect Like terms

$$18x - 10$$

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#11)

FOIL

$$\begin{matrix} & F & & O \\ (2-2) & & & (2-10) \\ & I & & L \end{matrix}$$

$$F: 2 \cdot 2 = 2^2$$

$$O: 2 \cdot (-10) = -10$$

$$I: -2 \cdot 2 = -2$$

$$L: -2 \cdot (-10) = 20$$

Collect like terms

$$\boxed{2^2 - 12 + 20}$$

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#13)

$$3^{-2} = \frac{1}{3^2} = \frac{1}{9}$$

Negative Exponent Rule

$$A^{-\frac{m}{n}} = \frac{1}{A^{\frac{m}{n}}}$$

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