

# PRACTICE TEST SOLUTIONS

$$1) \frac{6y-30}{y-5} = \frac{6(\cancel{y-5})}{\cancel{y-5}} = 6$$

PPP

$$1) \frac{y-7}{7y-49}$$

$$2) \frac{3x-6}{x^2-6x+8} = \frac{3(\cancel{x-2})}{(x-4)\cancel{(x-2)}} = \frac{3}{x-4}$$

$$2) \frac{y^2-10y-11}{2y-22}$$

$$\begin{array}{r} \cancel{8} \\ -4 \quad \times \quad -2 \\ \hline -6 \end{array}$$

$$\begin{array}{r} \cancel{10} \\ 2 \quad \times \quad 5 \\ \hline 7 \end{array}$$

$$3) \frac{k^2+7k+10}{k^2+9k+14} \cdot \frac{k^2+7k}{k^2+2k-15} = \frac{\cancel{14}}{2 \quad \times \quad 7} \cdot \frac{\cancel{15}}{5 \quad \times \quad -3}$$

PPP

$$3) \frac{x^2+6x+9}{x^2-4} \cdot \frac{x+2}{x+3}$$

$$= \frac{(\cancel{k+2})(\cancel{k+5})}{(\cancel{k+2})(\cancel{k+7})} \cdot \frac{k(\cancel{k+7})}{(\cancel{k+5})(k-3)}$$

$$= \frac{k}{k-3}$$

$$4) \frac{6y}{12y+6} \cdot \frac{10y+5}{7}$$

$$\frac{\cancel{6y}}{\cancel{6}(2y+1)} \cdot \frac{5(\cancel{2y+1})}{7}$$

$$\frac{5y}{7}$$

$$5) \frac{4y-4}{y} \div \frac{9y-9}{4y^2}$$

$$\frac{4y-4}{y} \cdot \frac{4y^2}{9y-9}$$

$$\frac{\cancel{4}(y-1)}{\cancel{y}} \cdot \frac{4y^{\cancel{2}}}{9(\cancel{y}-1)}$$

$$\frac{16y}{9}$$

$$6) \frac{x^2-24x+144}{10x-120} \rightarrow \frac{11x-132}{110}$$

$$= \frac{(\cancel{x-12})(\cancel{x-12})}{10(\cancel{x-12})} \cdot \frac{110}{11(\cancel{x-12})}$$

$$= \frac{110}{110}$$

$$= 1$$

$$7) \frac{5x+3}{10} + \frac{11x-3}{10}$$

$$= \frac{5x+3+11x-3}{10}$$

$$= \frac{16x}{10}$$

$$= \frac{8x}{5}$$

$$8) \frac{5x-1}{x^2-13x+40} + \frac{-7-4x}{x^2-13x+40}$$

$$= \frac{5x-1-7-4x}{x^2-13x+40}$$

$$\begin{array}{cc} 40 & \\ -8 & -5 \\ & -13 \end{array}$$

$$= \frac{\cancel{x-8}}{(\cancel{x-8})(x-5)}$$

$$= \frac{1}{x-5}$$

$$9) \frac{x}{x^2+9x-22} - \frac{2}{x^2+9x-22}$$

$$\frac{x-2}{x^2+9x-22}$$

$$\begin{array}{cc} -22 & \\ 11 & -2 \\ & 9 \end{array}$$

$$\frac{\cancel{x-2}^1}{(x+11)(\cancel{x-2})}$$

$$\frac{1}{x+11}$$

$$10) \quad \frac{6}{15x^3} \quad \frac{7}{25x^7}$$

15, 30, ~~45~~, 60, 75, 90  
 25, 50, ~~75~~, 100, 125  
 75x<sup>7</sup>

$$15x^3 = 3 \cdot 5 \cdot x \cdot x \cdot x$$

$$25x^7 = 5 \cdot x \cdot x \cdot x \cdot 5 \cdot x \cdot x \cdot x \cdot x$$

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$$3 \cdot 5 \cdot x^7 \cdot 5$$

$$\text{LCD} = 75x^7$$

$$11) \quad \frac{16}{2x} + \frac{42}{7x} = \frac{8}{x} + \frac{6}{x} = \frac{14}{x}$$

$$12) \quad \frac{3}{x} - \frac{8}{x-4}$$

$$\frac{3(x-4) + 8x}{x(x-4)}$$

$$\frac{3x-12+8x}{x(x-4)}$$

$$\frac{11x-12}{x(x-4)}$$

PPP  $\frac{5}{x} + \frac{6}{x+5}$

$$\frac{5(x+5) + 6x}{x(x+5)}$$

$$13) \frac{3}{y^2-3y+2} + \frac{7}{y^2-1}$$

$$\frac{3}{(y-1)(y-2)} \cdot \frac{(y+1)}{(y+1)} + \frac{7}{(y+1)(y-1)} \cdot \frac{(y-2)}{(y-2)}$$

$$\frac{3y+3+7y-14}{(y-1)(y-2)(y+1)}$$

$$\frac{10y-11}{(y-1)(y-2)(y+1)}$$

$$\frac{5x+25+6x}{x(x+5)}$$

$$\frac{11x+25}{x(x+5)}$$

$$14) \frac{\left(\frac{1}{8} - \frac{1}{6}\right) 24}{\left(\frac{1}{8} + \frac{1}{6}\right) 24}$$

6, 12, 18, 24, 30  
8, 16, 24, 32

$$\frac{24 \cdot \frac{1}{8} - 24 \cdot \frac{1}{6}}{24 \cdot \frac{1}{8} + 24 \cdot \frac{1}{6}} = \frac{3-4}{3+4} = -\frac{1}{7}$$

$$15) \left(\frac{3}{x} - \frac{1}{8} = \frac{5}{x}\right) \frac{8x}{1}$$

$$\frac{8x}{1} \cdot \frac{3}{x} - \frac{8x}{1} \cdot \frac{1}{8} = \frac{8x}{1} \cdot \frac{5}{x}$$

$$\begin{array}{r} 24 - x = 40 \\ -24 \quad \quad -24 \end{array}$$

$$\frac{-x}{-1} = \frac{16}{-1}$$

$$x = -16$$

$$16) \left(1 + \frac{1}{x} = \frac{20}{x^2}\right) \cdot \frac{x^2}{1}$$

$$x^2 + x = 20$$

$$x^2 + x - 20 = 0$$

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

$$x+5=0 \quad x-4=0$$

$$x = -5 \quad x = 4$$

$$1 \cdot \frac{x^2}{1} + \frac{1}{x} \cdot \frac{x^2}{1} = \frac{20}{x^2} \cdot \frac{x^2}{1}$$

$$\begin{array}{r} -20 \\ 5 \quad -4 \\ 1 \end{array}$$

$$17) \frac{360 \text{ tagged}}{x \text{ total}} = \frac{9 \text{ tagged}}{270 \text{ total}}$$

$$\frac{360}{x} = \frac{9}{270}$$

$$\frac{360}{x} = \frac{1}{30}$$

$$x = 360 \cdot 30$$

$$x = 10,800 \text{ water buffalos}$$