

$$A) \frac{5}{4a+1} = 1 + \frac{3}{8a+2}$$

$4a+1=0 \rightarrow \begin{matrix} 4a+1=0 \\ -1 \quad -1 \end{matrix} \rightarrow a = -\frac{1}{4}$
 $\frac{4a}{4} = -\frac{1}{4}$

$$\left(\frac{5}{4a+1}\right)(2)(4a+1) = 1(2)(4a+1) + \frac{3}{2(4a+1)}(2)(4a+1)$$

$$10 = 8a + 2 + 3$$

$$10 = 8a + 5$$

$$5 = 8a$$

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

B) ~~$\sqrt{16x-64}$~~ **SKIP**

$$C) \frac{n-3}{n^2+5n+4} + \frac{n-2}{n^2+3n+2} = \frac{n^2-12}{(n+1)(n+2)(n+4)}$$

$\frac{n-3}{(n+4)(n+1)}$ $\frac{n-2}{(n+2)(n+1)}$ $(n+1)(n+2)(n+4)$

$\rightarrow n-1=0 \quad n+2=0 \quad n+4=0$
 $\begin{matrix} -1 & -1 & -2 & -2 & -4 & -4 \end{matrix}$
 $n \neq -1 \quad \boxed{n \neq -2} \quad n \neq -4$

$$(n+1)(n+4)(n+2) \left(\frac{n-3}{(n+1)(n+1)} \right) + (n+1)(n+4)(n+2) \left(\frac{n-2}{(n+2)(n+1)} \right) = \frac{n^2-12}{(n+1)(n+2)(n+4)}$$

$$(n+2)(n-3) + (n+4)(n-2) = n^2-12$$

$$(n^2-3n+2n-6) + (n^2+4n-8) = n^2-12$$

$$2n^2+n-14 = n^2-12$$

$$n^2+n-2=0$$

$$(n+2)(n-1)=0$$

$n+2=0 \rightarrow \begin{matrix} n+2=0 \\ -2 \quad -2 \end{matrix} \rightarrow \boxed{n = -2}$

$n-1=0 \rightarrow \begin{matrix} n-1=0 \\ +1 \quad +1 \end{matrix} \rightarrow \boxed{n = 1}$

$$A) \frac{6m^2}{12m^4 - 18m^3} = \frac{\cancel{6m^2}}{\cancel{6m^3}(2m-3)} = \frac{1}{m(2m-3)} \text{ or } \frac{1}{2m^2 - 3m}$$

$$B) \frac{x^2 - 2xy + y^2}{x^2 - y^2} = \frac{(x-y)(x-y)}{\cancel{(x-y)}(x+y)} = \frac{x-y}{x+y}$$

$$C) \frac{\cancel{9x+bx} - \cancel{ay-by}}{9x-9y} = \frac{x(a+b) - y(a+b)}{9(x-y)} = \frac{(a+b)\cancel{(x-y)}}{9\cancel{(x-y)}} = \frac{a+b}{9}$$

$$D) \frac{(\cancel{c^2 - 2cd + d^2}) - w^2}{5c - 10b + 5w} = \frac{(c-d)(c-d) - w^2}{5(c-2b+w)}$$

$$= \frac{(\cancel{(c-d)} - w)(\cancel{(c-d)} + w)}{5(c-2b+w)}$$

$$= \frac{(c-d-w)(c-d+w)}{5(c-2b+w)}$$

$$A) \frac{12x+16}{(x-4)^2} \cdot \frac{2x-8}{3x+4}$$

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

$$\frac{8}{x-4}$$

$$B) \frac{8x+54}{x^2-81} - \frac{2x}{x^2-81}$$

$$\frac{8x+54-2x}{x^2-81}$$

$$\frac{6x+54}{x^2-81}$$

$$\frac{6(x+9)}{(x-9)(x+9)}$$

$$\frac{6}{x-9}$$

$$C) \frac{11}{9x^3} - \frac{2}{x^6} \div \frac{9}{x^3}$$

$$\frac{11}{9x^3} - \frac{2}{x^6} \cdot \frac{x^3}{9}$$

$$\frac{11}{9x^3} - \frac{2}{9x^3}$$

$$\frac{9}{9x^3}$$

$$\frac{1}{x^3}$$

$$D) \left(\frac{7}{x} + \frac{35}{x^2} \right) \cdot x^2$$

$$\left(1 + \frac{25}{x} \right) \cdot x^2$$

$$7x + 35$$

$$x^2 - 25$$

$$\frac{7(x+5)}{(x-5)(x+5)}$$

$$\frac{7}{x-5}$$

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$$A) r(x) = \frac{5x-11}{7x-14}$$

$$\text{Domain: } (-\infty, 2) \cup (2, \infty)$$

$$7x-14=0$$

$$+14 \quad +14$$

$$\cancel{7}x = \frac{14}{\cancel{7}}$$

$$x=2$$

$$B) R(x) = \frac{x^2-16}{x^2-x-42}$$

$$x^2-x-42=0$$

$$(x-7)(x+6)=0$$

$$x-7=0 \quad \text{or} \quad x+6=0$$

$$+7 \quad +7$$

$$-6 \quad -6$$

$$x=7$$

$$x=-6$$

$$\text{Domain: } (-\infty, -6) \cup (-6, 7) \cup (7, \infty)$$

$$A) \frac{(b+r)}{w+1} = \frac{4}{w-5} (w+1)$$

$$b+r = \frac{4(w+1)}{w-5} - r$$

$$b = \frac{4(w+1)}{w-5} - r$$

$$B) \frac{c}{b-3} = \frac{4}{a+5}$$

$$\frac{c}{b-3} (b-3)(a+5) = \frac{4}{a+5} (b-3)(a+5)$$

$$c(a+5) = 4(b-3)$$

$$ac + 5c = 4b - 12$$

$$\frac{ac + 5c + 12}{4} = \frac{4b}{4}$$

$$\frac{ac + 5c + 12}{4} = b$$

A)

$$A = kB^3$$

B)

$$m = \frac{k\sqrt{n}}{p^2}$$

C)

$$y = \frac{kx\sqrt[3]{z}}{\sqrt{w}}$$

$$A) \frac{46x^4 - 69x^3}{23x^2}$$

$$\frac{\cancel{23}x^3(2x-3)}{\cancel{23}x^2}$$

$$\boxed{x(2x-3)} \text{ or } \textcircled{2x^2 - 3x}$$

$$B) \frac{4x^2 - 9}{9 - 6x}$$

$$\frac{(2x-3)(2x+3)}{-1(6x-9)}$$

$$\frac{\cancel{(2x-3)}(2x+3)}{\cancel{3}(2x-3)}$$

$$\textcircled{-\frac{2x+3}{3}}$$

$$C) \frac{x^2 - 4}{x^2 - 10x - 24}$$

$$\frac{(x-2)(x+2)}{(x-12)(x+2)}$$

$$\frac{\cancel{(x+2)}}{\cancel{(x+2)}(x-12)}$$

$$\textcircled{\frac{x-2}{x-12}}$$

A) $D = k \cdot v^2$

$$140 = k \cdot (50)^2$$
$$\frac{140}{2500} = k \cdot \frac{2500}{2500}$$

$$\frac{7}{125} = k \quad \text{or} \quad k = .056$$

B) $D = k v^2$

$$D = .056 v^2$$

c) $D = .056 (70)^2$

$$D = .056 (4900)$$

$$D = 274.4 \text{ feet}$$

D) $\frac{68.6}{.056} = \frac{.056 v^2}{.056}$

$$\sqrt{1225} = \sqrt{v^2}$$

$$35_{mph} = v$$