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Alg II Unit 4 Review

01/29/2016

$$10) \frac{6n+1}{30n^2-18n} - \frac{n+1}{30n^2-18n}$$

$$= \frac{(6n+1) - (n+1)}{6n(5n-3)}$$

$$= \frac{5n}{6n(5n-3)}$$

$$= \frac{5}{6(5n-3)}$$

$$1) \frac{80x}{24x^2} = \frac{\overset{10}{\cancel{80}} \cancel{x}}{\underset{3}{\cancel{24}} \underset{x}{\cancel{x^2}}} = \frac{10}{3x}, \text{ undefined @ } x=0$$

$24x^2 = 0$
 $x = 0$

$$2) \frac{28r^3}{20r^2} = \frac{\overset{7}{\cancel{28}} \overset{r}{\cancel{r^3}}}{\underset{5}{\cancel{20}} \underset{r^2}{\cancel{r^2}}} = \frac{7r}{5}, \text{ undefined @ } r=0$$

$20r^2 = 0$
 $r = 0$

$$3) \frac{n^2-2n-8}{n^2-7n+12} = \frac{(n+2)(n-4)}{(n-3)(n-4)} = \frac{n+2}{n-3}, \text{ undefined @ } n=3 + n=4$$

$n^2-7n+12 = 0$
 $(n-3)(n-4) = 0$
 $n=3 \quad n=4$

$$4) \frac{x^2+5x-6}{x^2+8x+12} = \frac{(x+6)(x-1)}{(x+6)(x+2)} = \frac{x-1}{x+2}, \text{ undefined @ } x=-6 + x=-2$$

$x^2+8x+12 = 0$
 $(x+6)(x+2) = 0$
 $x = -6 \quad x = -2$

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5)

$$\frac{3k^2 - k - 4}{7k^2 + 7k} = \frac{(3k+4)(k+1)}{7k(k+1)}$$

$$= \frac{3k+4}{7k}$$

$7k^2 + 7k = 0$
 $7k(k+1) = 0$
 $k = 0$ or $k = -1$
 undefined $\Rightarrow k = 0$ and $k = -1$

$$\frac{P(-12) | D(-1)}{3-4}$$

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

$$= \frac{(3k-4)(k+1)}{(3k-4)(k+1)}$$

6)

$$\frac{3p^2 + p - 10}{2p^2 + 7p + 6} = \frac{(3p-5)(p+2)}{(2p+3)(p+2)}$$

$$= \frac{3p-5}{2p+3}$$

undefined $\Rightarrow x = -3/2$ and $x = -2$
 $2p^2 + 7p + 6 = 0$
 $(2p+3)(p+2) = 0$
 $p = -3/2$ or $p = -2$

$$\frac{P(-30) | D(1)}{6-5}$$

$$\frac{(3p^2 - 5p) + (6p - 10)}{p(3p-5) + 2(6p-10)}$$

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

$$\frac{P(12) | S(7)}{3+4}$$

$$\frac{(2p^2 + 3p) + (4p + 6)}{p(2p+3) + 2(4p+6)}$$

$$= \frac{(2p+3)(p+2)}{(2p+3)(p+2)}$$

7)

$$\left(\frac{6x^2}{4x}\right) \left(\frac{7x^2}{9x}\right) = \frac{6 \cdot 7}{4 \cdot 9} \frac{x^2 \cdot x^2}{x \cdot x} = \frac{7x^2}{6}$$

8)

$$\left(\frac{20^2}{80^2}\right) \left(\frac{90^5}{10}\right) = \frac{2 \cdot 9}{8 \cdot 10} \frac{4^5 \cdot 7}{4^2} = \frac{90^5}{40}$$

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$$9) \frac{n^2 + 12n + 36}{n^2 - 5n - 6} \cdot \frac{n-6}{5n^2 + 30n}$$

$$= \frac{(n+6)^2 \cancel{(n-6)}}{(n+1)\cancel{(n-6)}(5n)\cancel{(n+6)}}$$

$$= \frac{n+6}{5n(n+1)}$$

$$10) \frac{v^2 + 11v + 24}{v^2 + 2v - 48} \cdot \frac{8}{10v + 30}$$

$$= \frac{(v+3)\cancel{(v+8)}\cancel{(8)}^4}{(v+8)(v-6)\cancel{(10)}\cancel{(v+3)}_5}$$

$$= \frac{4}{5(v-6)}$$

$$11) \frac{7v}{5v^2 - 4v - 1} \cdot \frac{5v + 1}{3}$$

$$= \frac{7v \cancel{(5v+1)}}{\cancel{(5v+1)}(v-1)(3)}$$

$$= \frac{7v}{3(v-1)}$$

$$\begin{array}{r|l} P(-5) & D(-4) \\ & 1-5 \end{array}$$

$$\begin{array}{l} 5v^2 + 1v + (-5v - 1) \\ v(5v+1) - 1(5v+1) \\ (5v+1)(v-1) \end{array}$$

12) $\frac{2n^2 + 9n + 7}{3n} \cdot \frac{1}{2n+7}$ P(14) | S(9)

$\frac{(2n^2 + 7n) + (2n + 7)}{3n(2n+7)} = \frac{n(2n+7) + 1(2n+7)}{(2n+7)(n+1)}$

$= \frac{n+1}{3n}$

13) $\frac{9}{n+3} \div \frac{9n+81}{n^2+13n+36}$

$= \frac{9}{n+3} \cdot \frac{n^2+13n+36}{9n+81}$

$= \frac{9(n+9)(n+4)}{(n+3)(9)(n+9)}$

$= \frac{n+4}{n+3}$

$$14) \frac{m^2 - 16}{m^2 + 3m - 28} \div \frac{1}{m+7}$$

$$= \frac{m^2 - 16}{m^2 + 3m - 28} \cdot \frac{m+7}{1}$$

$$= \frac{(m+4)(m-4)(\cancel{m+7})}{(\cancel{m+7})(m-4)} = m+4$$

$$15) \frac{k-3}{k^2+k-12} \div \frac{1}{k^2+9k+8}$$

$$= \frac{k-3}{k^2+k-12} \cdot \frac{k^2+9k+8}{1} = \frac{(\cancel{k-3})(k+1)(k+8)}{(k+4)(\cancel{k-3})} = \frac{(k+1)(k+8)}{k+4}$$

$$16) \frac{1}{n-5} \div \frac{n+9}{n^2-13n+40}$$

$$= \frac{1}{n-5} \cdot \frac{n^2-13n+40}{n+9}$$

$$= \frac{(\cancel{n-5})(n-8)}{(\cancel{n-5})(n+9)}$$

$$= \frac{n-8}{n+9}$$

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Unit 4A Revised

02/01/2016

$$17) \left(\frac{6}{5x} + \frac{1}{5x} = \frac{x+1}{5x^2} \right) 5x^2$$

$$\left(\frac{6}{5x} \right) (5x^2) + \left(\frac{1}{5x} \right) (5x^2) = \left(\frac{x+1}{5x^2} \right) (5x^2)$$

$$6x + x = x+1$$

$$6x = 1$$

$$\boxed{x = \frac{1}{6}}$$

L.H.S.

$$= \frac{6}{5(\frac{1}{6})} + \frac{1}{5(\frac{1}{6})}$$

$$= \frac{7}{5/6}$$

check

R.H.S.

$$= \frac{\frac{1}{6} + 1}{5(\frac{1}{6})^2}$$

$$= \frac{7/6}{5/36} = \frac{7}{5/6} = \text{L.H.S.}$$

$$18) \left(\frac{2}{b} = \frac{2}{3} - \frac{1}{b} \right) 3b$$

$$\left(\frac{2}{b} \right) (3b) = \left(\frac{2}{3} \right) (3b) - \left(\frac{1}{b} \right) (3b)$$

$$= \frac{2}{9/2}$$

$$= \frac{4}{9}$$

$$6 = 2b - 3$$

$$2b = 9$$

$$\boxed{b = 9/2}$$

L.H.S.

check

R.H.S.

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

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

$$= \frac{6}{9} - \frac{2}{9} = \frac{4}{9} = \text{L.H.S.}$$

19) $\left(\frac{5}{3x} = 2 - \frac{2}{x}\right) 3x$

$\left(\frac{5}{3x}\right) 3x = 2(3x) - \left(\frac{2}{x}\right) 3x$

$5 = 6x - 6$

$6x = 11$

$x = \frac{11}{6}$

L.H.S.
 $= \frac{5}{3(\frac{11}{6})}$

$= \frac{10}{11}$

check

R.H.S.
 $= 2 - \frac{2}{\frac{11}{6}}$

$= 2 - \frac{12}{11}$
 $= \frac{22}{11} - \frac{12}{11}$

$= \frac{10}{11} = \text{L.H.S.}$

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

$\left(\frac{1}{n-3} = \frac{n-5}{(n-1)(n-3)} - \frac{4n+1}{(n-1)(n-3)}\right) (n-1)(n-3)$

$\left(\frac{1}{n-3}\right) (n-1)(n-3) = \left(\frac{n-5}{(n-1)(n-3)}\right) (n-1)(n-3) - \left(\frac{4n+1}{(n-1)(n-3)}\right) (n-1)(n-3)$

check

$n-1 = n-5 - 4n+1$ L.H.S.

$n-1 = -3n-4 = 1$

$4n = -5$

$n = -\frac{5}{4}$

$= \frac{-4}{17}$

R.H.S.

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

$= \frac{-100}{153} - \frac{-64}{153}$

$= \frac{-4}{17}$

Alg II Unit 4A Review

01/28/2016

21)

$$\left(\frac{x+1}{2} = \frac{x^2 - 5x + 6}{2x+6} + \frac{1}{2} \right)$$

$$\left(\frac{x+1}{2} = \frac{x^2 - 5x + 6}{2(x+3)} + \frac{1}{2} \right) 2(x+3)$$

$$\frac{(x+1)(\cancel{2})(x+3)}{\cancel{2}} = \frac{(x^2 - 5x + 6)(\cancel{2})(x+3)}{2(x+3)} + \frac{(1)(\cancel{2})(x+3)}{\cancel{2}}$$

$$(x+1)(x+3) = (x^2 - 5x + 6) + (x+3)$$

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

$$4x + 3 = -4x + 9$$

$$+4x \quad -3 \quad +4x \quad -9$$

$$8x = 6$$

$$x = \frac{3}{4}$$

check

L.H.S.

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

$$= \frac{\frac{7}{4}}{2}$$

$$= \frac{7}{8}$$

R.H.S.

$$= \frac{(\frac{3}{4})^2 - 5(\frac{3}{4}) + 6}{2(\frac{3}{4}) + 6} + \frac{1}{2}$$

$$= \frac{\frac{3}{8} + \frac{1}{2}(\frac{4}{4})}{2}$$

$$= \frac{7}{8}$$

$$22) \left(\frac{x+3}{x} = 1 - \frac{1}{x-1} \right) (x)(x-1)$$

$$\frac{(x+3)\cancel{x}(x-1)}{\cancel{x}} = 1(x)(x-1) - \frac{1(\cancel{x})(\cancel{x-1})}{\cancel{x-1}}$$

$$(x+3)(x-1) = x(x-1) - x$$

$$\cancel{x^2} + 2x - 3 = \cancel{x^2} - x - x$$

$$2x - 3 = -2x$$

$$+2x + 3 \quad +2x + 3$$

$$4x = 3$$

$$x = \frac{3}{4}$$

check

L.H.S.

$$= \frac{\left(\frac{3}{4}\right) + 3 \left(\frac{4}{4}\right)}{\left(\frac{3}{4}\right)}$$

$$= \frac{\frac{15}{4}}{\frac{3}{4}}$$

$$= \frac{15}{4} \cdot \frac{4}{3}$$

$$= 5$$

R.H.S

$$= 1 - \frac{1}{\left(\frac{3}{4}\right) - 1}$$

$$= 1 - \frac{1}{-\frac{1}{4}}$$

$$= 1 - (-4)$$

$$= 1 + 4$$

$$= 5$$

