PROBLEMARIO

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Problemario

Algebra I

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Bachillerato Técnico en Administración en Recursos Humanos

Primer Semestre

D5

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Dulce María

$(3a^3 + 5a^2 - 4)(3a)$

$$
\begin{array}{r|l}
3a & 3a^3 + 5a^2 - 4 \\
 & a^2 - a + 2a \\
\hline
 & -3a^3 + 3a^2 \\
\hline
 & 8a^2 \\
 & -6a^2 \\
\hline
 & 2a^2 \\
 & -4 \\
\hline
 & -2a^2
\end{array}
$$

$a^2 - a + 2a + \left(\frac{-2a^2}{3a}\right)$

$(8x^4 - 6x^3 + 3x^2 - 7x + 16)(2x^2 + 3x - 4)$

$$
\begin{array}{r|l}
2x^2+3x-4 & 8x^4 - 6x^3 + 3x^2 - 7x + 16 \\
 & 4x^2 - 9x + 15 - 26 \\
\hline
 & -8x^4 - 12x^3 \\
\hline
 & -18x^3 + 3x^2 \\
 & 18x^3 + 27x^2 \\
\hline
 & 30x^2 - 7x + 16 \\
 & -30x^2 - 45x + 60 \\
\hline
 & -52x - 76 \\
 & 52x - 78 \\
\hline
 & -154
\end{array}
$$

$4x^2 - 9x + 15 - 26 + \left(\frac{-154}{2x^2+3x-4}\right)$

$\left(-\frac{2}{25}x^3 + \frac{5}{12}x^2 - \frac{3}{5}x + \frac{3}{16}\right)\left(-\frac{2}{5}x + \frac{3}{4}\right)$

$$
\begin{array}{r|l}
-\frac{2}{5}x+\frac{3}{4} & -\frac{2}{25}x^3 + \frac{5}{12}x^2 - \frac{3}{5}x + \frac{3}{16} \\
 & \frac{1}{5}x^2 + \frac{2}{3}x - \frac{3}{6} + \frac{1}{4} \\
\hline
 & \frac{2}{25}x^3 - \frac{3}{20}x^2 \\
\hline
 & -\frac{4}{5}x^2 - \frac{3}{5}x \\
 & \frac{4}{5}x^2 - \frac{6}{12} \\
\hline
 & -\frac{1}{10} + \frac{3}{16} \\
 & \frac{1}{10} - \frac{3}{16} \\
\hline
 & 0
\end{array}
$$

$\frac{1}{5}x^2 + \frac{2}{3}x - \frac{3}{6} + \frac{1}{4}$

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$(2y^3+5y^2+2y-1)\div(y+3)$

$$
\begin{array}{r|l}
y+3 & 2y^3+5y^2+2y-1 \\
 & 2y^2-1y+5 \\
\hline
 & -2y^3-6y^2 \\
\hline
 & \quad -1y^2+2y \\
 & \quad +1y^2+3y \\
\hline
 & \qquad 5y-1 \\
 & \qquad -5y-15 \\
\hline
 & \qquad\quad -16
\end{array}
$$

$2y^2-1y+5+\left(\frac{-16}{y+3}\right)$

$(8x^4-6x^3+3x^2-7x+16)\div(2x^2+3x-4)$

$$
\begin{array}{r|l}
2x^2+3x-4 & 8x^4-6x^3+3x^2-7x+16 \\
 & 4x^2-9x+23 \\
\hline
 & -8x^4-12x^3 \\
\hline
 & \quad -18x^3+19x^2-7x \\
 & \quad +18x^3+27x^2-36x \\
\hline
 & \qquad 46x^2-43x \\
 & \qquad -46x^2-69x \\
\hline
 & \qquad\quad -112x+16
\end{array}
$$

$(10x^4+4x^3-2x^2-2x-6)\div(2x+2)$

$$
\begin{array}{r|l}
2x+2 & 10x^4+4x^3-2x^2-2x-6 \\
 & 5x^3+3x^2-4x+3 \\
\hline
 & -10x^4-10x^3 \\
\hline
 & \quad 6x^3-2x^2 \\
 & \quad 16x^3-6x^2 \\
\hline
 & \qquad -8x^2-2x \\
 & \qquad +8x^2+8x \\
\hline
 & \qquad\quad 6x-6 \\
 & \qquad\quad -6x-6 \\
\hline
 & \qquad\quad\ \ 0
\end{array}
$$

$5x^3+7x^2-8x+7$

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$\left(\frac{3}{8}x^4y^5+\frac{1}{10}x^2y^3\right)^3=\left(\frac{3}{8}x^4y^5+\frac{1}{10}x^2y^3\right)\left(\frac{3}{8}x^4y^5+\frac{1}{10}x^2y^3\right)\left(\frac{3}{8}x^4y^5+\frac{1}{10}x^2y^3\right)$

$\frac{27}{512}x^{64}y^{125}+\frac{3}{800}x^{16}y^{45}$

$+\frac{9}{640}x^{32}y^{75}+\frac{1}{1000}x^8y^{27}$

$\frac{27}{512}x^{64}y^{125}+\frac{3}{800}x^{16}y^{45}+\frac{9}{640}x^{32}y^{75}+\frac{1}{1000}x^8y^{27}$

$(4x^2+2x)^2=(4x^2+2x)(4x^2+2x)$

$16+4x^2+8+4x$

$+4x^2 \quad +x^4+2x^2+x^2$

$+8 \quad +2x^2 \quad +4+2x$

$+4x \quad +x^2 \quad +2x+x$

$16+8x^4+16+8x+x^4+4x^4+x^4+4+4x+x$

$\left(\frac{1}{8}x^3+2x^2+\frac{3}{2}x+2\right)^2=\left(\frac{1}{8}x^3+2x^2+\frac{3}{2}x+2\right)\left(\frac{1}{8}x^3+2x^2+\frac{3}{2}x+2\right)$

$\frac{1}{64}x^9+\frac{2}{8}x^6+\frac{3}{16}x^3+\frac{2}{8}$

$+\frac{2}{8}x^6 \quad +4x^4+\frac{6}{2}x^2+4x^2$

$+\frac{3}{16}x^3 \quad +\frac{6}{2}x^2 \quad +\frac{9}{4}x+\frac{6}{2}x$

$+4x^2 \quad +\frac{6}{2}x+\frac{2}{8}x^3+4$

$\frac{1}{64}x^9+\frac{1}{2}x^{12}+\frac{3}{8}x^6+\frac{2}{8}+4x^4+6x^4+8x^4+\frac{9}{4}x+6x+\frac{2}{8}x^3+4$

$(x+5)^3=(x+5)(x+5)(x+5)$

x^3+25x

$+5x^2+125$

$x^3+25x+5x^2+125$

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$(2x^4 - 2x^3 + 3x^2 + 5x + 10)(x+2)$

$2x^3 - 6x^2 + 15x + 25$

$x+2 \;|\; 2x^4 - 2x^3 + 3x^2 + 5x + 10$

$-2x^4 - 4x^3$

$-6x^3 + 3x^2$

$6x^3 + 12x^2$

$15x^2 + 5x$

$-15x^2 - 30x$

$-25x + 10$

$-25x - 50$

40

$2x^3 - 6x^2 + 15x + 25 + \left(\frac{40}{x+2}\right)$

$(x^{10} - 1024)(x+2)$

x^9

$x+2 \;|\; x^{10} - 1024$

$-x^{10} - 2x^9$

$-1026x^9$

$x^9 + \left(\frac{-1026x^9}{x+2}\right)$

$(x^2 - 5x - 1)(x-3)$

$x+2$

$x-3 \;|\; x^2 - 5x - 1$

$-x^2 + 3x$

$2x - 1$

$2x + 6$

5

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

$(R^4 S^3 T^2 U)^5 = (R^4 S^3 T^2 U)(R^4 S^3 T^2 U)(R^4 S^3 T^2 U)(R^4 S^3 T^2 U)(R^4 S^3 T^2 U)$

$R^{1024} + RS^{768} + RS^{324} + RT^{512} + RT^{64} + RU^{256} + RU^4 + S^{243} + ST^{162} + ST^{48} + SU^{81} + SU^3 + T^{32} + TU^{16} + TU^2$

$R^{1024} + RS^{1092} + RT^{576} + RU^{260} + S^{243} + ST^{210} + SU^{84} + T^{32} + TU^{18} + U$

$$(a^3 b^4 c^2 d^5)^3 = (a^3 b^4 c^2 d^5)(a^3 b^4 c^2 d^5)(a^3 b^4 c^2 d^5)$$

$$a^{27} + ab^{48} + ac^{12} + ad^{75}$$
$$+ ab^{38} \qquad + b^{64} + bc^{16} + bd^{100}$$
$$+ ac^{18} \qquad + bc^{32} \qquad + c^8 + cd^{50}$$
$$+ ad^{45} \qquad + bd^{80} \qquad + cd^{70} + d^{125}$$

$$a^{27} + ab^{84} + ac^{30} + ad^{120} + b^{84} + bc^{48} + bd^{180} + c^8 + cd^{220} + d^{125}$$