



Mi Universidad

Problematario

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Nombre del tema: Problematario

Parcial: 3 unidad

Nombre de la Materia: Algebra

Nombre del profesor: Juan José Ojeda

Nombre de la Licenciatura: Bachillerato en Recursos Humanos

Cuatrimestre: I ero

problemas de.

TERCERA UNIDAD

✓ 1. $(3A^3 + 5A^2 - 4) : (3A)$

$$\frac{3A^3 + 5A^2 - 4}{3A} = \frac{3A^3}{3A} + \frac{5A^2}{3A} - \frac{4}{3A}$$

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

✓ 2. $(\frac{2}{3}a^2b^2 - \frac{1}{4}a^2b^4 + 5ab^4 - 2/5b^5) : (-\frac{1}{2}ab^2)$

$$\frac{\frac{2}{3}a^2b^2}{-\frac{1}{2}ab^2} - \frac{\frac{1}{4}a^2b^4}{-\frac{1}{2}ab^2} + \frac{5ab^4}{-\frac{1}{2}ab^2} - \frac{2/5b^5}{-\frac{1}{2}ab^2}$$

$$-\frac{4}{3}ab^0 + \frac{2}{4}ab^2 - 10a^0b^2 + \frac{4}{5}ab^3$$

$$-\frac{4}{3}a + \frac{2}{4}ab^2 - 10b^2 + \frac{4}{5}ab^3$$

✓ 3. $(x^4 - 2x^3 - 11x^2 + 30x - 20) : (x^2 + 3x - 2)$

$$\begin{array}{r} x^2 - 5x + 6 \\ x^2 + 3x - 2 \overline{) x^4 - 2x^3 - 11x^2 + 30x - 20} \\ \underline{x^4 + 3x^3 - 2x^2} \\ -5x^3 - 9x^2 + 30x \\ \underline{+ 5x^3 + 15x^2 - 10x} \\ +6x^2 + 20x - 20 \\ \underline{- 6x^2 - 18x + 12} \\ 2x - 8 \end{array}$$

$B = x^2 - 5x + 6 + \frac{2x - 8}{x^2 + 3x - 2}$

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4. $(x^6 + 5x^4 + 3x^2 - 2x) \div (x^2 - x + 3)$

$$\begin{array}{r}
 x^6 + x^3 + 3x^2 - 3 \\
 x^2 - x + 3 \overline{) x^6 + 5x^4 + 3x^2 - 2x} \\
 \underline{-x^6 + x^5 - 3x^4} \\
 +x^5 - 2x^4 \\
 \underline{-x^5 + x^4 - 3x^3} \\
 +3x^4 - 3x^3 + 3x^2 \\
 \underline{-3x^4 + 2x^3 - 6x^2} \\
 -3x^3 - 2x \\
 \underline{+3x^3 - 3x + 9} \\
 1x + 9
 \end{array}$$

$P = x^4 + x^3 + 3x^2 - 3 + \frac{1x+9}{x^2-x+3}$

5. $(x^4 - 2x^3 - 11x^2 + 30x - 20) \div (x^2 + 3x - 2)$

$$\begin{array}{r}
 x^4 - 2x^3 - 11x^2 + 30x - 20 \\
 x^2 + 3x - 2 \overline{) x^4 - 2x^3 - 11x^2 + 30x - 20} \\
 \underline{-x^4 - 3x^3 + 2x^2} \\
 -5x^3 - 9x^2 + 30x \\
 \underline{5x^3 + 15x^2 - 10x} \\
 6x^2 + 20x - 20 \\
 \underline{-6x^2 - 18x - 12} \\
 2x - 8
 \end{array}$$

$P = x^2 - 5x + 6 + \frac{2x-8}{x^2+3x-2}$

6. $(x^6 + 5x^4 + 3x^2 - 2x) \div (x^2 - x + 3)$

$$\begin{array}{r}
 x^6 + x^3 + 3x^2 + 5x^2 - 2x \\
 x^2 - x + 3 \overline{) x^6 + 5x^4 + 3x^2 - 2x} \\
 \underline{-x^6 + x^5 - 3x^4} \\
 +x^5 + 2x^4 \\
 \underline{-x^5 + x^4 + 3x^3} \\
 3x^4 + 3x^3 + 3x^2 \\
 \underline{-3x^4 + 3x^3 - 9x^2} \\
 6x^3 - 6x^2 - 2x \\
 \underline{-6x^3 + 6x^2 - 18x} \\
 -20x^2 - 10x \\
 \underline{+20x^2 + 20} \\
 -20x^2 - 10x + 20 \\
 \underline{+20x^2 + 20} \\
 -10x + 40
 \end{array}$$

$P = x^4 + x^3 + 3x^2 + 6x - 20 + \frac{-10x+40}{x^2-x+3}$

7. $(2x^4 - 2x^3 + 3x^2 + 5x + 10) \div (x + 2)$

$$\begin{array}{r}
 2x^3 + 6x^2 - 9x + 23 \\
 x+2 \overline{) 2x^4 - 2x^3 + 3x^2 + 5x + 10} \\
 \underline{-2x^4 + 9x^3} \\
 +6x^3 + 3x^2 \\
 \underline{-6x^3 + 12x^2} \\
 -9x^2 + 5x \\
 \underline{+9x^2 + 18x} \\
 23x + 10 \\
 \underline{-23x - 46} \\
 -33
 \end{array}$$

$R = 2x^3 + 6x^2 - 9x + 23 \left(\frac{-33}{x+2} \right)$

8. $(x^{10} - 1024) \div (x + 2)$

$$\begin{array}{r}
 x^9 - 2x^8 + 9x^7 - 8x^6 + 16x^5 - 32x^4 + 64x^3 - 128x^2 - 256x + 512 \\
 x+2 \overline{) x^{10} - 1024} \\
 \underline{-x^{10} - 2x^9} \\
 2x^9 + 9x^8 \\
 \underline{-2x^9 - 4x^8} \\
 +5x^8 + 9x^7 \\
 \underline{-5x^8 - 10x^7} \\
 -x^7 + 9x^6 \\
 \underline{+x^7 + 2x^6} \\
 -9x^6 + 9x^5 \\
 \underline{+9x^6 + 18x^5} \\
 -9x^5 + 9x^4 \\
 \underline{+9x^5 + 18x^4} \\
 -9x^4 + 9x^3 \\
 \underline{+9x^4 + 18x^3} \\
 -9x^3 + 9x^2 \\
 \underline{+9x^3 + 18x^2} \\
 -9x^2 + 9x \\
 \underline{+9x^2 + 18x} \\
 -9x + 9 \\
 \underline{+9x + 18} \\
 27
 \end{array}$$

9. $(x^3 - 5x - 1) \div (x - 3)$

$$\begin{array}{r}
 x^2 + 3x + 4 \\
 x-3 \overline{) x^3 - 5x - 1} \\
 \underline{-x^3 + 3x^2} \\
 +3x^2 - 5x \\
 \underline{-3x^2 + 9x} \\
 +9x - 1 \\
 \underline{-9x + 27} \\
 +11
 \end{array}$$

$R = x^2 + 3x + 4 \left(\frac{11}{x-3} \right)$

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10. $(R^7 S^3 T^2 U)^5$

$$\begin{aligned} &(R^7 S^3 T^2 U)(R^7 S^3 T^2 U) \\ &R^8 S^6 T^4 U^2 (R^7 S^3 T^2 U) \\ &R^2 S^9 T^6 U^3 (R^7 S^3 T^2 U) \\ &R^{16} S^{12} T^8 U^4 (R^7 S^3 T^2 U) \\ &R^{20} S^{15} T^{10} U^5 (R^7 S^3 T^2 U) \end{aligned}$$

$P = R^{20} S^{15} T^{10} U^5$

11. $(-a^3 b^4 c^2 d^5)^6 (-a^3 b^4 c^2 d^5)$

$$\begin{aligned} &a^6 b^8 c^4 d^{10} (-a^3 b^4 c^2 d^5) \\ &-a^9 b^{12} c^6 d^{15} (-a^3 b^4 c^2 d^5) \\ &a^{12} b^{16} c^8 d^{20} (-a^3 b^4 c^2 d^5) \\ &a^{15} b^{20} c^{10} d^{25} (-a^3 b^4 c^2 d^5) \end{aligned}$$

$P = -a^{18} b^{24} c^{12} d^{30}$

12. $(-3x^6 y^3 z^2)(-3x^6 y^3 z^2)$

$9x^{12} y^6 z^4$

13. $(\frac{2}{5} a^2 b - \frac{1}{3} a b - 9)(\frac{3}{2} a b^2)$

$$\frac{3}{10} a^3 b^3 - \frac{12}{9} a^2 b^3 - \frac{12}{2} a b^2$$

14. $(3x^3 + 2y^2)(3x^3 + 2y^3)^2$

$9x^6 + 6x^3 y^2$

$6x^3 y^2 + 4y^4$

$9x^6 + 12x^3 y^4 + 4y^4 (3x^2 + 2y^3)$

$27x^8 + 36x^5 y^2 + 12x^2 y^4$

$18x^6 y^2 + 24x^3 y^2 + 8y^6$

$27x^8 + 36x^5 y^2 + 12x^2 y^4 + 18x^6 y^2 + 24x^3 y^2 + 8y^6$

$P = 27x^8 + 18x^6 y^2 + 36x^5 y^2 + 24x^3 y^2 + 12x^2 y^4 + 8y^6$

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$$\checkmark 15. - \left(\frac{2}{6} a^3 + \frac{1}{3} b^2 \right) \left(\frac{2}{6} a^3 + \frac{1}{3} b^2 \right)$$

$$\frac{4}{36} a^6 + \frac{2}{18} a^3 b^2$$

$$+ \frac{2}{18} a^3 b^2 + \frac{1}{9} b^4$$

$$\frac{4}{36} a^6 + 1 a^3 b^2 + \frac{1}{9} b^4$$

$$\frac{2}{18} + \frac{2}{18} = \frac{6+6}{6} = 1$$