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*Parcial 3*

*Nombre de la Materia :*algebra

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*Nombre de la Licenciatura:* técnico en enfermería



1.-  $(3A^3 + 5A^2 - 4) : (3A)$

$$\begin{array}{r} a^2 + 2a \\ 3a \overline{)3a^3 + 5a^2 - 4} \\ -3a^3 \\ \hline +5a^2 \\ -6a^2 \\ \hline -a^2 - 4 \end{array}$$

2.-  $(2/3A^2B^2 - 1/4A^2B^4 + 5/6AB^4 - 2/5B^5) : (-1/2AB^2)$

$$\begin{array}{r} -\frac{4}{3}A + \frac{1}{2}AD^2 - \frac{5}{3}B^2 \\ -\frac{1}{2}AB^2 \overline{) \frac{2}{3}A^2B^2 - \frac{1}{4}A^2B^4 + \frac{5}{6}AB^4 - \frac{2}{5}B^5} \\ -\frac{4}{3}A^2B^2 \\ -\frac{1}{4}A^2B^4 \\ +\frac{5}{6}AB^4 \\ -\frac{5}{6}AB^4 \\ \hline -\frac{2}{3}B^5 \end{array}$$

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

$$\begin{array}{r} x^2 + 5x - 20 \\ x^2 + 3x - 2 \overline{)x^4 - 2x^3 - 11x^2 + 30x - 20} \\ x^4 - 3x^3 + 2x^2 \\ \hline -5x^3 - 9x^2 + 30x \\ +5x^3 + 15x^2 \\ \hline -24x^2 + 40x - 20 \\ +24x^2 + 72x - 48 \\ \hline +112x - 68 \end{array}$$

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

$$\begin{array}{r} x^4 + x^3 + 3x^2 \\ x^6 + 5x^4 + 3x^2 - 2x \overline{)x^6 + 0x^5 + 5x^4 + 0x^3 + 3x^2 - 2x} \\ x^6 + x^5 - 3x^4 \\ \hline +x^5 + 2x^4 + 0x^3 \\ -x^5 + x^4 - 3x^3 \\ \hline +3x^4 - 3x^3 + 3x^2 \\ -3x^4 + 3x^3 - 6x^2 \\ \hline -6x^2 - 2x \end{array}$$

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

5.  $\begin{array}{r} x^2 - 5x + 6 \\ \hline x^2 + 3x - 2 \sqrt{x^4 - 2x^3 - 11x^2 + 30x - 20} \\ -x^4 - 3x^3 + 2x^2 \\ \hline -5x^3 - 9x^2 + 30x \\ +5x^3 + 15x^2 + 10x \\ \hline +6x^2 + 40x - 20 \\ -6x^2 - 18x + 12 \\ \hline +22x - 8 \end{array}$

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

6.  $\begin{array}{r} x^4 + 2x^3 + 3x^2 \\ \hline x^2 - x + 3 \sqrt{x^6 + 5x^4 + 3x^2 - 2x} \\ -x^6 + x^5 + 5x^4 + 3x^2 - 2x \\ \hline x^5 + 5x^4 - 3x^2 \\ +x^5 + 2x^4 + 0x^3 \\ -x^5 + x^4 - 3x^3 \\ +3x^4 - 3x^3 + 3x^2 \\ -3x^4 + 3x^3 - 6x^2 \\ \hline -6x^2 - 2x \end{array}$

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

7.  $\begin{array}{r} 2x^3 - 6x^2 + 15x - 25 \\ \hline x + 2 \sqrt{2x^4 - 2x^3 + 3x^2 + 5x + 10} \\ -2x^4 - 4x^3 \\ \hline -6x^3 + 3x^2 \\ +6x^3 + 12x^2 \\ \hline +15x^2 + 5x \\ -15x \\ \hline -25x + 10 \\ +25x + 50 \\ \hline +60 \end{array}$

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

Handwritten long division of  $x^{10} - 1024$  by  $x + 2$ . The quotient is  $x^9 - 2x^8 + 4x^7 - 8x^6 + 16x^5 - 32x^4 + 64x^3 - 128x^2 + 256x - 512$ .

$$\begin{array}{r} x^9 - 2x^8 + 4x^7 - 8x^6 + 16x^5 - 32x^4 + 64x^3 - 128x^2 + 256x - 512 \\ x+2 \sqrt{x^{10} - 1024} \\ \underline{x^{10} + 2x^9} \\ -2x^9 + 4x^8 \\ \underline{-2x^9 - 4x^8} \\ +4x^8 - 8x^7 \\ \underline{+4x^8 + 8x^7} \\ -16x^7 + 16x^6 \\ \underline{-16x^7 - 32x^6} \\ -32x^6 + 32x^5 \\ \underline{-32x^6 - 64x^5} \\ +64x^5 - 128x^4 \\ \underline{+64x^5 + 128x^4} \\ -128x^4 + 128x^3 \\ \underline{-128x^4 - 256x^3} \\ +256x^3 + 256x^2 \\ \underline{+256x^3 + 512x^2} \\ -256x^2 - 512x \\ \underline{-256x^2 - 512x} \\ +512x - 1024 \\ \underline{+512x - 1024} \\ 0 \end{array}$$

9.-  $(x^3 - 5x - 1) : (x - 3)$

Handwritten long division of  $x^3 - 5x - 1$  by  $x - 3$ . The quotient is  $x^2 + 3x + 4$  and the remainder is 11.

$$\begin{array}{r} x^2 + 3x + 4 \\ x-3 \sqrt{x^3 - 5x - 1} \\ \underline{-x^3 + 3x^2} \\ +3x^2 - 5x \\ \underline{+3x^2 + 9x} \\ -4x - 1 \\ \underline{-4x + 12} \\ +11 \end{array}$$

10.- ( R4 S3 T2 U )5

Handwritten sequence of terms involving R, S, T, U:

- $(CR^4S^3T^2U)(CR^4S^3T^2U)(CR^4S^3T^2U)(CR^4S^3T^2U)$
- $(CR^8S^6T^4U^2)(CR^4S^3T^2U)$
- $(CR^{12}S^9T^3U^3)(CR^4S^3T^2U)$
- $(CR^{16}S^{12}T^4U^4)(CR^4S^3T^2U)$
- $(CR^{20}S^{15}T^5U^5)$

11.- ( -A3 B4 C2 D5 ) 6

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

$$\begin{aligned} & 12 \\ & (-3x^6 y^3 z^2) (-3x^6 y^3 z^2) \\ & ( + 9x^{12} y^6 z^2 u) \end{aligned}$$

$$13.- \left( \frac{2}{5} A^2 B - \frac{4}{3} AB - 4 \right) \left( \frac{3}{2} A B^2 \right)$$

$$\begin{aligned}
 & 13 \quad (\frac{3}{2} A B^2) \left( \frac{2}{5} A^2 b - \frac{4}{3} A B - 4 \right) \\
 & + \frac{6}{10} A^3 b^3 - \frac{12}{8} A^2 B^3 - \frac{12}{2} A B^2 \\
 & \underline{+ \frac{6}{10} A^3 b^3 - \frac{12}{8} A^2 B^3 - 5 A B^2}
 \end{aligned}$$

$$14 \cdot (3x^3 + 2y^2)(3x^3 + 2y^3)^2$$

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$$\begin{aligned} & (3x^3 + 2y^2)(3x^3 + 2y^3)^2 \\ & (9x^6 + 12x^3y^2 + 4y^6) \\ & \quad + 6x^7y^2 + 4y^4 \\ & (9x^6 + 12x^3y^2 + 4y^6)^2 \\ & (9x^6 + 12x^3y^2 + 4y^6)(9x^6 + 12x^3y^2 + 4y^6) \\ & 81x^{12} + 108x^9y^2 + 36x^6y^4 \\ & + 108x^9y + 144x^6y^4 + 36x^3y^6 \\ & + 30x^6y^4 + 48x^3y^6 - 16y^8 \\ & \hline 81x^{12} + 216x^9y^2 + 216x^6y^4 + 84x^3y^6 - 16y^8 \end{aligned}$$

$$15 \cdot (2/6 A^3 + 1/3 B^2)(2/6 A^3 + 1/3 B^2)$$

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$$\begin{aligned} & \left(\frac{2}{6}A^3 + \frac{1}{3}B^2\right)\left(\frac{2}{6}A^3 + \frac{1}{3}B^2\right) \\ & \frac{4}{36}A^6 + \frac{2}{18}A^3B^2 \\ & + \frac{2}{18}A^3B^2 + \frac{1}{9}B^4 \\ & \frac{4}{36} + \frac{4}{18}A^3B^2 + \frac{1}{9}B^4 \end{aligned}$$