kkhi

Ensayo

María José Figueroa Solórzano

Problemario de la unidad 3

Parcial 3

Algebra

Juan José Ojeda

Recursos humanos

Cuatrimestre

PROBLEMARIO DE TERCERA UNIDAD

1.- $(3a^3+5a^2-4)\div(3a)$

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

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

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

2 ÷ $\left(\frac{2}{3}a^2b^2 - \frac{1}{4}a^2b^4 + \frac{5}{6}ab^4 - \frac{2}{5}b^5\right) \div \left(-\frac{1}{2}ab^2\right)$

$\frac{\frac{2}{3}a^2b^2}{-\frac{1}{2}ab^2}$ $\quad \frac{-\frac{1}{4}a^2b^4}{-\frac{1}{2}ab^2}$ $\quad \frac{+\frac{5}{6}ab^4}{-\frac{1}{2}ab^2}$ $\quad \frac{-\frac{2}{5}b^5}{-\frac{1}{2}ab^2}$

$-\frac{4}{3}ab^0 + \frac{2}{4}ab^2 - \frac{10}{6}a^0b^2 + \frac{4}{5}ab^3$

$-\frac{4}{3}a + \frac{2}{4}ab^2 - \frac{10b^2}{6} + \frac{4}{5}ab^3$

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

$x^2 - 5x + 6$

$x^2+3x-2 \;\big|\; x^4 - 2x^3 - 11x^2 + 30x - 20$

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

$-5x^3 - 9x^2 + 30x$

$+5x^3 + 15x^2 - 10x$

$+6x^2 + 20x - 20$

$-6x^2 - 18x + 12$

$2x - 8$

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

$$
\begin{array}{r|l}
x^2 - x + 3 & x^4 + x^3 + 3x^2 - 3 \\
\hline
x^6 - x^5 + 3x^4 & \\
\hline
-x^6 + x^5 - 3x^4 & \\
\hline
+x^5 + 2x^4 & \\
-x^5 + x^4 - 3x^3 & \\
\hline
+3x^4 - 3x^3 + 3x^2 & \\
-3x^4 + 3x^3 - 6x^2 & \\
\hline
-3x^2 - 2x & \\
+3x^2 - 3x + 9 & \\
\hline
7x + 9 &
\end{array}
$$

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

$$
\begin{array}{r|l}
x^2 + 3x - 2 & x^2 - 5x + 6 \\
\hline
x^4 - 2x^3 - 11x^2 + 30x - 20 & \\
\hline
-x^4 - 3x^3 + 2x^2 & \\
\hline
-5x^3 - 9x^2 + 30x & \\
5x^3 + 15x^2 - 10x & \\
\hline
6x^2 + 20x - 20 & \\
-6x^2 - 18x + 12 & \\
\hline
2x - 8 &
\end{array}
$$

$R = 2x - 8$

$$\frac{2x-8}{x^2+3x-2}$$

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

$$x^2-x+3 \;\overline{)\; x^6+5x^4+3x^2-2x \;}\; = x^4+x^3+3x^2+6x-20$$

$-x^6+x^5-3x^4$

x^5+2x^4

$-x^5+x^4+3x^3$

$3x^4+3x^3+3x^2$

$-3x^4+3x^3-9x^2$

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

$-6x^3+6x^2-18x$

$-20x^2\ 20x$

$+20x+20$

$-20x^20+20$

$R = x^4+x^3+3x^2+6x-20 \quad \left(\frac{-20x^2+20}{x^2-x+3}\right)$

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

$$x+2 \;\overline{)\; 2x^4-2x^3+3x^2+5x+10 \;}\; = 2x^3+6x^2-9x+23$$

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

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

$-6x^3-12x^2$

$-9x^2+5x$

$+9x^2+18x$

$23x+10$

$-23x-46$

-33

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

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

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

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

$$
\begin{array}{r|l}
x^3 - 5x - 1 & x-3 \\
-x^3 + 3x^2 & \\
\hline
+3x^2 - 5x & \\
-3x^2 + 9x & \\
\hline
+4x - 1 & \\
-4x + 12 & \\
\hline
+11 &
\end{array}
$$

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

10.- $(R^4 S^3 T^2 U)^5$

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

$R^8 S^6 T^4 U^2 (R^4 S^3 T^2 U)$

$R^{12} S^9 T^6 U^3 (R^4 S^3 T^2 U)$

$R^{16} S^{12} T^8 U^4 (R^4 S^3 T^2 U)$

$R^{20} S^{15} T^{10} U^3$

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

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

$a^6 b^8 c^4 d^{10} (-a^3 b^4 c^2 d^5)$

$-a^9 b^{12} c^6 d^{15} (-a^3 b^4 c^2 d^5)$

$a^{12} b^{16} c^8 d^{20} (-a^3 b^4 c^2 d^5)$

$a^{13} b^{20} c^{10} d^{25} (-a^3 b^4 c^2 d^5)$

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

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

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

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

13- $\left(\frac{2}{5}a^2b - \frac{4}{3}ab - 4\right)\left(\frac{3}{2}ab^2\right)$

$\frac{3}{10}a^3b^3 - \frac{12}{9}a^2b^3 - \frac{12}{4}ab^2$

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

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

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

$9x^6+72x^6y^4+4y^4\ (3x^2+2y^3)$

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

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

$27x^8+36^{x5}y^2+72x^2y^4\ 8x^6y^2+24x^3y^2 8y^6$

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

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

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

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

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

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