Material de Apoyo

9°

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Práctica de división de polinomios

Efectúe las divisiones que se le muestran a continuación:

1. $\dfrac{15t^3s^2 - 27tms^5}{9tms^2}$

2. $\dfrac{-7kn^3 + 3p^5z}{21n^2kp^6z}$

3. $\dfrac{z^2 - 5z + 6}{z - 3}$

4. $(9x^2 - 24xp + 16p^2) \div (-9x + 12p)$

5. $(9x^2 + x^3 + 26) \div (2x^2 + 3x + 7)$

6. $(-11x^2 + x^4 - 20) \div (x^2 + 3x - 2)$

Soluciones

1. $\dfrac{15t^3s^2 - 27tms^5}{9tms^2}$

$$= \frac{\dfrac{15t^3s^2 - 27tms^5}{9tms^2}}{}$$

$$= \frac{3ts^2(5t^2 - 9s^3)}{9tms^2}$$

$$= \frac{\cancel{3}^1\cancel{t}\cancel{s^2}(5t^2 - 9s^3)}{\cancel{9}^3\cancel{t}ms^{\cancel{2}}}$$

$$= \frac{5t^3 - 9s^3}{3m}$$

2. $\dfrac{-7kn^3 + 3p^5z}{21n^2kp^6z}$

$$= \frac{-7kn^3 + 3p^5z}{21n^2kp^6z}$$

$$= \frac{-7kn^3}{21n^2kp^6} + \frac{3p^5z}{21n^2kp^6z}$$

$$= \frac{\cancel{-7}kn^{3-2}}{\cancel{21}^3kp^6} + \frac{\cancel{3}^1\cancel{z}}{\cancel{21}^7n^2kp^{6-5}\cancel{z}}$$

$$= \frac{-1 \cdot n^1}{3p^6} + \frac{1}{7n^2kp^1}$$

$$= \frac{-n}{3p^6} + \frac{1}{7n^2kp}$$

3. $\dfrac{z^2 - 5z + 6}{z - 3}$

$$
\begin{aligned}
&\quad \frac{z^2 - 5z + 6}{z - 3} \\
&= \frac{(z-3)(z-2)}{z-3} \\
&= \frac{(z-3)(z-2)}{(z-3)} \quad \text{Con } z - 3 \neq 0 \\
&= \quad z - 2
\end{aligned}
$$

4. $(9x^2 - 24xp + 16p^2) \div (-9x + 12p)$

$$
\begin{aligned}
&\quad \frac{9x^2 - 24xp + 16p^2}{-9x + 12p} \\
&= \frac{(3x - 4p)^2}{-3(3x - 4p)} \\
&= \frac{(3x - 4p)^{2-1}}{-3} \\
&= \frac{(3x - 4p)^1}{-3} \\
&= \frac{3x - 4p}{-3}
\end{aligned}
$$

5. $(9x^2 + 2x^3 + 26) \div (2x^2 + 3x + 7)$

$$
\begin{array}{rr|l}
2x^3 + 9x^2 \qquad\ + 26 & & 2x^2 + 3x + 7 \\
\underline{-2x^3 - 3x^2\ -7x} & & x + 3 \\
6x^2\ -7x + 26 & & \\
\underline{-6x^2\ -9x - 21} & & \\
-16x\ +5 & &
\end{array}
$$

$$
\frac{9x^2 + 2x^3 + 26}{2x^2 + 3x + 7} = x + 3 + \frac{-16x + 5}{2x^2 + 3x + 7}
$$

3

6. $(-11x^2 + x^4 - 20) \div (x^2 + 3x - 2)$

$$
\begin{array}{l}
\quad x^4 \qquad\quad - 11x^2 \qquad - 20 \,\big|\, \overline{x^2 + 3x - 2} \\
\underline{\; -x^4 - 3x^3 \; + 2x^2 \qquad\qquad} \; \big|\, x^2 - 3x \\
\qquad\quad -3x^3 \; - 9x^2 \\
\qquad\quad\underline{\; 3x^3 \; + 9x^2 - 6x \;} \\
\qquad\qquad\qquad\qquad -6x - 20
\end{array}
$$

$$
\frac{-11x^2 + x^4 - 20}{x^2 + 3x - 2} = x^2 - 3x + \frac{-6x - 20}{x^2 + 3x - 2}
$$