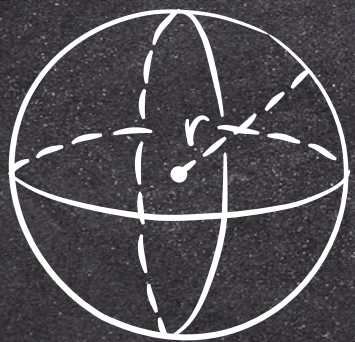


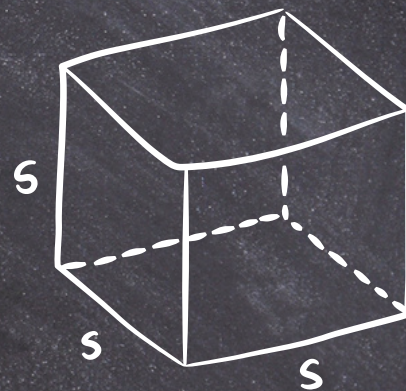
Material de Apoyo Cátedra 1

Ayudantía 4



$$V = \frac{4}{3} \pi r^3$$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

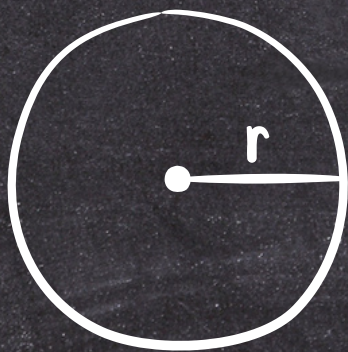


$$V = s^3$$

$$y = mx + b$$

$$ax^2 + bx + c = 0$$

$$\frac{x}{a} + \frac{y}{b} = 1$$



$$A = \pi r^2$$

$$a = \frac{V_f - V_i}{+}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(a - b)^2 = a^2 - 2ab + b^2$$

$$(a + b)(a - b) = a^2 - b^2$$

$$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

$$(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2ac + 2bc$$

$$(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

DETERMINANTE

$$ax^2 + bx + c = 0$$

$$\Rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

- Si es positivo: Dos soluciones reales y distintas
- Si es negativo: Dos soluciones no reales y complejas conjugadas
- Si es igual a 0: Una solución real y repetida

$$3) \quad x^4 + x^3 - 11x^2 - mx + n \div (x^2 - 9)$$

$$\hookrightarrow (x+3)(x-3)$$

$$\bullet P(3) = 81 + 27 - 99 - 3m + m = 0$$

$$m = 3m - 9$$

Las Soluciones

$$\text{son } x=3 \text{ y } x=-3$$

$$\bullet P(-3) = 81 - 27 - 99 + 3m + m = 0$$

$$m = -3m + 45$$

$$-3m + 45 = 3m - 9$$

$$54 = 6m$$

$$\cancel{9 = m} \text{ y } \cancel{m = 18}$$

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$$P(x) = x^4 + x^3 + 19x^2 + ax + b$$

$$D(x) = x^2 + x - 20$$

$$P(x) = D(x) \cdot Q(x)$$

$$\frac{P(x)}{D(x)} = Q(x)$$

$$\frac{(x^4 + x^3 + 19x^2 + ax + b)}{(x^2 + x - 20)}$$

$$(x+5)(x-4)$$

Dos Soluciones

$$\bullet \bullet \boxed{x = -5 / x = 4}$$

$$\bullet P(-5) = 625 - 125 + 475 - 5a + b = 0$$

$$\boxed{b = 5a - 975}$$

$$\bullet P(4) = 256 + 64 + 304 + 4a + b = 0$$

$$\boxed{b = -4a - 624}$$

$$\boxed{a = 39}$$

$$\boxed{b = -780}$$

$$5a - 975 = -4a - 624$$

$$9a = 351$$

$$|a| + |b| =$$

$$\boxed{|39| + |-780| = 819}$$

Comprobamos

$$x^4 + x^3 + 19x^2 + 39x - 780 / (x+5)$$

$$\boxed{x = -5}$$

$$\begin{array}{r|rrrrr} -5 & 1 & -4 & 39 & -156 & 0 \\ \hline & & & & & \end{array}$$

$$x^3 - 4x^2 + 39x - 156 / (x-4)$$

$$\boxed{x = 4}$$

$$\begin{array}{r|rrrr} 4 & 1 & 0 & 39 & 0 \\ \hline & & & & \end{array}$$

$$\boxed{x^2 + 39}$$

Podemos decir que $Q(x)$ es $x^2 + 39$ para que se cumpla

$$P(x) = D(x) \cdot Q(x)$$

$$\frac{(x^4 + x^3 + 19x^2 + 39x - 780)}{(x+5)(x-4)} = (x^2 + 39)$$

$$\boxed{|a| + |b| = 819}$$



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$$12x^4 - 44x^3 + 37x^2 + 11x - 10$$

TEOREMA DE GAUSS

Grado Independiente ⁽¹⁰⁾ → ±(1, 2, 5, 10)

Coficiente Principal ⁽¹²⁾ → ±(1, 2, 3, 4, 6, 12)

Posibles ceros = ± { 1, 1/2, 1/3, 1/4, 1/6, 1/12, 2, 2/3, 5/3, 5/4, 5/6, 5/12, 5/2, 5, 10/3, 10/4, 10/6 }

Ruffini

$$\begin{array}{r|rrrrr}
 & 12 & -44 & 37 & 11 & -10 \\
 1/2 & & 6 & -19 & 9 & 10 \\
 \hline
 & 12 & -38 & 18 & 20 & 0
 \end{array}
 \quad (x - 1/2) \therefore x = 1/2$$

$$\begin{array}{r|rrrr}
 & -6 & 22 & -20 & \\
 -1/2 & 12 & -44 & 40 & 0 \\
 \hline
 & 12 & -44 & 40 & 0
 \end{array}
 \quad (x + 1/2) \therefore x = -1/2$$

$$\begin{array}{r|rr}
 & 24 & -40 \\
 2 & 12 & -20 & 0 \\
 \hline
 & 12 & -20 & 0
 \end{array}
 \quad (x - 2) \therefore x = 2$$

$$12x - 20 = x = 5/3$$