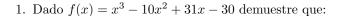
Cálculo Diferencial - Actividad 1

Resolver los siguientes ejercicios de forma analítica y comprobar los resultados con MAPLE.



(a)
$$f(0) = -30$$

(b)
$$f(2) = 0$$

(c)
$$f(3) = f(5)$$

(d)
$$f(1) > f(-3)$$

(e)
$$f(-1) = -6f(6)$$

2. Si
$$f(x) = x^3 - 3x + 2$$
 encuentre:

(a)
$$f(0)$$

(b) f(-1)

(f)
$$f(y) = y^3 - 10y^2 + 31y - 30$$

(g)
$$f(a) = a^3 - 10a^2 + 31a - 30$$

(h)
$$f(yz) = y^3z^3 - 10y^2z^2 + 31yz - 30$$

(i)
$$f(x-2) = x^3 - 16x^2 + 83x - 140$$

(c)
$$f(-\frac{1}{2})$$

3. Si
$$f(x) = x^3 - 10x^2 + 31x - 30$$
 y $\phi(x) = x^4 - 55x^2 - 210x - 216$ demuestre que:

(a)
$$f(2) = \phi(-2)$$

(c)
$$f(5) = \phi(-4)$$

(b)
$$f(3) = \phi(-3)$$

(d)
$$f(0) + \phi(0) + 246 = 0$$

4. Si
$$F(x) = 2^x$$
, encuentre:

(a)
$$F(0)$$

(b) F(-3)

(c)
$$F(\frac{1}{3})$$

(d)
$$F(-1)$$

5. Dado
$$F(x) = x(x-1)(x+6)(x-\frac{1}{2})(x+\frac{5}{4})$$
, demuestre que:

(a)
$$F(0) = F(1) = F(-6) = F(\frac{1}{2}) = F(-\frac{5}{4}) = 0$$

6. Si
$$f(m_1) = \frac{m_1 - 1}{m_1 + 1}$$
 demuestre que:

$$\frac{f(m_1) - f(m_2)}{1 + f(m_1)f(m_2)} = \frac{m_1 - m_2}{1 + m_1 m_2}$$

7. Si
$$\phi(x) = a^x$$
 demuestre que $\phi(y) \cdot \phi(z) = \phi(y+z)$

8. Dado
$$\phi(x) = \log \frac{1-x}{1+x}$$
 demuestre que:

$$\phi(x) + \phi(y) = \phi\left(\frac{x+y}{1+xy}\right)$$

9. Si $f(\phi) = \cos \phi$, demuestre que:

$$f(\phi) = f(-\phi) = -f(\pi - \phi) = -f(\pi + \phi)$$

10. Si $f(x) = \frac{2x-3}{x+7}$, encuentre $f(\sqrt{2})$.

10. _____