UNIVERSIDAD DEL SURESTE

Licenciatura
Medicina Humana

Materia
Biomatematicas

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Trabajo
Derivadas 1-25

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Grado y grupo
2 semestre
Grupo “B”

1er parcial

Tapachula, Chiapas

15 de marzo de 2023

EJERCICIOS

Lunes
06-Marzo-23

1. $f(x) = 3x^2 - x + 5$

$f'(x) = 2 \cdot 3x - 1 + 0$

$f'(x) = 6x - 1$

2. $g(t) = 1 - 3t^2 - 2t^4$

$g'(t) = 0 - 2 \cdot 3t^{2-1} - 4 \cdot 2t^{4-1}$

$g'(t) = -6t - 8t^3$

3. $f(x) = (2x+3)(3x-2)$

$f'(x) = (2+0)(3x-2) + (2x+3) \cdot (3-0)$

$f'(x) = (2)(3x-2) + (2x+3) \cdot (3)$

4. $g(x) = (2x^2-1)(x^3+2)$

$g'(x) = (4x) \cdot (x^3+2) + (2x^2-1)(3x^{3-1})$

$h(x) = (x+1)^3$

$h'(x) = 3 \cdot (x+1)^{3-1} \cdot (1+0)$

$h'(x) = 3(x+1)^2 \cdot (1)$

$h'(x) = 3(x+1)^2$

5. $h(x) = x+1)^3$

$h'(x) = 3 \cdot (x+1)^{3-1} \cdot (1+0)$

$h'(x) = 3(x+1)^2 \cdot (1)$

$h'(x) = 3(x+1)^2$

6. $g(t) = (4t-7)^2$

$g'(t) = 2(4t-7) \cdot (4-0)$

$g'(t) = 2(4t-7) \cdot (4)$

$g'(t) = 8(4t-7)$

7. $f(y) = y(2y-1)(2y+1)$

$f'(y) = (2y^2-y)(2y^2+y)$

$f'(y) = 2\cdot 2y^{2-1} - 1\cdot(2y^2+y) + (2y^2-y)(2\cdot 2y^{2-1}+1)$

$f'(y) = (4y-1)\cdot(2y^2+y) + (2y^2-y)(4y+1)$

8. $f(x) = 4x^4 - \frac{1}{x^2}$ $u \quad v$

$f'(x) = 4\cdot 4x^{4-1} - \frac{0(x^2) - 1(2x^{2-1})}{[x^2]^2}$

$f'(x) = 16x^3 - \left[\frac{-2x}{x^4}\right]$

$f'(x) = 16x^3 + \frac{2x}{x^4}$

9. $g(x) = \frac{1}{x+1} - \frac{1}{x-1}$

$g'(x) = \frac{0(x+1) - 1(1+0)}{(x+1)^2} - \frac{0(x-1) - 1(1-0)}{(x-1)^2}$

$g'(x) = \frac{-1}{(x+1)^2} + \frac{1}{(x-1)^2}$

10. $f(t) = \frac{1}{4-t^2}$

$f'(t) = \frac{0(4-t^2) - (1)(-2t)}{(4-t^2)^2}$

$f'(t) = \frac{(4-t^2)+2t}{(4-t^2)^2}$

11. $h(x) = \frac{3}{x^2+x+1}$

$h'(x) = \frac{0\cdot(x^2+x+1) - 3\cdot(2x+1+0)}{(x^2+x+1)^2}$

$h'(x) = \frac{-6x-3}{(x^2+x+1)^2}$

12. $F(x) = \frac{1}{1-\frac{2}{x}}$

$f'(x) = \frac{0(1-\frac{2}{x}) - (1)\left[0 - \frac{(0)(x)-(2)(1)}{(x)^2}\right]}{(1-\frac{2}{x})^2}$

13. $g(t) = (t^2+1)(t^3+t^2+1)$ $(uv = u'v + uv')$

$g'(t) = (2t+0)(3t^2+2t+0) + (t^2+1)(3t^2+2t+0)$

$g'(t) = (2t)(t^3+t^2+1) + (t^2+1)(3t^2+2t)$

14. $F(x) = (2x^3+3)(17x^4-6x+2)$ $uv = (u'v + uv')$

$u = 2x^3+3 \quad u' = 6x^2$

$v' = 68x^3 - 6x \quad v = 17x^4 - 6x + 2$

$f'(x) = (6x^2)(17x^4-6x+2) + (2x^3+3)(68x^3-6x)$

15. $g(z) = \frac{u}{2v} = \frac{1}{2}\cdot\frac{u}{v} \quad \frac{u}{v} = \frac{u'v - uv'}{v^2}$

$g'(z) = \frac{(0)(3z^2) - (1)(z)}{(3z^2)^2}$ $\quad g'(z) = \frac{-z}{(3z^2)^2} = \frac{1}{2}\cdot\frac{u}{v}$

$g'(z) = \frac{(0)(3z^2) - (1)(6z)}{(3z^2)^2} = \frac{-6z}{(3z)^4}$ $\quad g'(z) = \frac{-2}{(3z)^4} + \frac{6z}{(3z)^4}$

16. $F(x) = \frac{2x^3 - 3x^2 + 4x - 5}{x^2}$ $\quad \frac{u}{v} = \frac{u'v - uv'}{v^2}$

$u = (2x^3 - 3x^2 + 4x - 5) \quad u' = (6x^2 - 6x + 4) \quad v = (x^2) \quad v' = (2x)$

$F'(x) = \frac{(6x^2-6x+4)(x^2) - (2x^3-3x^2+4x-5)(2x)}{(x)^4}$

17. $g(y) = 2y(3y^2-1)(y^2+2y+3)$

$g'(y) = 2y(3y^4 - y^2 + 6y^3 - 2y + 9y^2 - 3)$

$g'(y) = (3y^4 + 6y^3 + 8y^2 - 2y - 3)$

$g'(y) = 6y^3 + 12y^4 + 16y^3 - 4y^2 - 6y$

18. $f(x) = \frac{x^2-4}{x^2+4}$ u v $\frac{u'v - uv'}{v^2}$

$f'(x) = \frac{(2x-0)(x^2+4) - (x^2-4)(2x+0)}{(x^2+4)^2}$

$f'(x) = \frac{(2x)(x^2+4) - (x^2-4)(-2x)}{(x^2+4)^2}$

$f'(x) = \frac{(x^2+4) - (x^2-4)}{(x^2+4)^2}$

19. $g(t) = \frac{t-1}{t^2+2t+1}$ u v $\frac{u'v - uv'}{v^2}$

$g'(t) = \frac{(1)(t^2+2t+1) - (t-1)(2t+2+0)}{(t^2+2t+1)^2}$

$g'(t) = \frac{(t^2+2t+1) - (2t+2)}{(t^2+2t+1)^2}$

20. $u(x) = \frac{1}{(x+2)^2}$ u v $\frac{u'v - uv'}{v^2}$

$v'(x) = \frac{(0)(x+2)^2 - (1)2(x+2)(1+0)}{(x+2^2)^2}$

$v'(x) = \frac{-2(x+2)}{(x+2)^4}$

21. $v(t) = \frac{1}{(t-1)^3}$ $(t-1)^{-3}$

$v'(t) = -3(t-1)^{-4}(t-0)$

$v'(t) = -3(t-1)^{-4}(t)$

22. $h(x) = \frac{2x^3+x^2-3x+17}{2x-5}$ $\frac{u}{v} = \frac{u'v-uv'}{v^2}$

$$h'(x) = \frac{(6x^2+2x-3)(2x-5)-(2x^3+x^2-3x+17)(2)}{(2x-5)^2}$$

$$h'(x) = \frac{(6x^2+2x-3)(2x-5)-(2)(2x^3+x^2-3x+17)}{(2x-5)^2}$$

23. $g(x) = \frac{3x}{x^3+7x-5}$ $\frac{u}{v} = \frac{u'v-uv'}{v^2}$

$$g'(x) = \frac{(3)(x^3+7x-5)-(x^3+7x-5)(3x^2+7-0)}{(x^3+7x-5)^2}$$

$$g'(x) = \frac{(3)(x^3+7x-5)-(x^3+7x-5)(3x^2+7)}{(x^3+7x-5)^2}$$

24. $F(x) = x^3 - \frac{1}{(t+\frac{7}{t})^2}$ $(t+\frac{7}{t})^{-2}$

$$F(t) = -2\left(t+\frac{7}{t}\right)^{-3}\left(7+\frac{7}{t^2}\right)$$

25. $g(x) = \dfrac{\frac{x^4}{x^3} - \frac{2}{x^2}}{\frac{2x^4 - 3x^3}{x^7}} \cdot \dfrac{x^2 - 2x}{x^3} = \dfrac{x^9 - 2x^8}{2x^7 - 3x^6}$

$u = x^9 - 2x^8$

$u' = 9x^8 - 16x^7$

$v = 2x^7 - 3x^6$

$v' = 14x^6 - 18x^5$

$$g'(x) = \frac{(9x^8 - 16x^7)(2x^7 - 3x^6) - (x^9 - 2x^8)(14x^6 - 18x^5)}{(2x^7 - 3x^6)^2}$$