

Ejercicio 1: Calcula las derivadas de las siguientes funciones:

1	$f(x) = -5$	24	$f(x) = \frac{1}{x^5}$	47	$f(x) = \frac{\cos(x)}{\sqrt{x}}$
2	$f(x) = \pi$	25	$f(x) = \frac{5}{x}$	48	$f(x) = \operatorname{cosec}(x^2 + 1)$
3	$f(x) = x$	26	$f(x) = \frac{2}{4x^5}$	49	$f(x) = \sec(\ln(x))$
4	$f(x) = 3x$	27	$f(x) = \sqrt{x}$	50	$f(x) = \operatorname{tg} \sqrt{x+1}$
5	$f(x) = -5x$	28	$f(x) = \sqrt[5]{x}$	51	$f(x) = \operatorname{cotg}(-2x + 1)$
6	$f(x) = 9x$	29	$f(x) = \sqrt{\operatorname{sen}(x)}$	52	$f(x) = \sec \sqrt{x}$
7	$f(x) = x^2$	30	$f(x) = \sqrt{\ln(x)}$	53	$f(x) = \operatorname{cosec}(x + 1)^2$
8	$f(x) = x^4$	31	$f(x) = -3\sqrt{e^x}$	54	$f(x) = \arccos(2 + 3x)$
9	$f(x) = x^8$	32	$f(x) = 2^{x^2+4x}$	55	$f(x) = \operatorname{arcsen}(2x + 3)$
10	$f(x) = x^{10}$	33	$f(x) = 3\sqrt{x}$	56	$f(x) = \operatorname{arctg}(-2x + 1)$
11	$f(x) = -x^3 + 2x$	34	$f(x) = e^{\operatorname{tag}(x)}$	57	$f(x) = \frac{1-x}{x+3x^2}$
12	$f(x) = 5x^2 - 3x$	35	$f(x) = e^{\ln(x)}$	58	$f(x) = \frac{2x^2}{x^2-3}$
13	$f(x) = 3x^2 + 2x + 1$	36	$f(x) = \log_2(3x^2 + 1)$	59	$f(x) = \frac{\operatorname{tag}x}{3x}$
14	$f(x) = \frac{1}{2}x^3 + x - 5$	37	$f(x) = \log_3(\operatorname{sen}(x))$	60	$f(x) = \frac{\cos(x)}{\operatorname{sen}(x)}$
15	$f(x) = -\frac{1}{3}x^6 + 3x - 1$	38	$f(x) = \operatorname{Ln}(\operatorname{cotg}(x))$	61	$f(x) = \operatorname{tag}(x) \cdot e^x$
16	$f(x) = (x - 5)^4$	39	$f(x) = \operatorname{Ln}\left(\frac{x+1}{x-2}\right)$	62	$f(x) = \operatorname{arctg}(x) \cdot \operatorname{Ln}(x)$
17	$f(x) = (x - 5)^3$	40	$f(x) = \operatorname{Ln} \sqrt{x}$	63	$f(x) = \sec(x) \cdot \sqrt{x}$
18	$f(x) = (3x - 1)^2$	41	$f(x) = \frac{x}{\operatorname{Ln}x}$	64	$f(x) = \operatorname{arcsen}(x) \cdot \sqrt{x}$
19	$f(x) = (2x^2 + 1)^5$	42	$f(x) = \frac{\ln(x+1)}{x}$	65	$f(x) = x \cdot \operatorname{Ln} x$
20	$f(x) = (\operatorname{Ln}(x))^5$	43	$f(x) = e^{\frac{x}{x+1}}$	66	$f(x) = x \cdot \cos(x)$
21	$f(x) = (\operatorname{sen}(x))^5$	44	$f(x) = \operatorname{sen}^2(x)$	67	$f(x) = \operatorname{Ln} \sqrt{\frac{x}{x+1}}$
22	$f(x) = \frac{1}{x}$	45	$f(x) = \operatorname{sen}(x^2)$	68	$f(x) = \frac{e^x}{e^x + e^{-x}}$
23	$f(x) = \frac{1}{x^6}$	46	$f(x) = \operatorname{sen}(\cos(x))$		

Soluciones:

1	0	24	$f(x) = \frac{-5}{x^6}$	47	$\frac{2x \operatorname{sen}(x) - \cos(x)}{2x\sqrt{x}}$
2	0	25	$\frac{-5}{x^2}$	48	$\frac{-2x \cos(x^2 + 1)}{\operatorname{sen}^2(x^2 + 1)}$
3	1	26	$\frac{-5}{2x^6}$	49	$\frac{\operatorname{sen}(\ln(x))}{x \cos^2(\ln x)}$
4	3	27	$\frac{1}{2\sqrt{x}}$	50	$\frac{1}{2(x+2)\sqrt{x+1}}$
5	-5	28	$\frac{1}{5\sqrt{x^4}}$	51	$\frac{1}{\operatorname{sen}^2(-2x+1)}$
6	9	29	$\frac{\cos(x)}{2\sqrt{\operatorname{sen}(x)}}$	52	$\frac{\operatorname{sen}(\sqrt{x})}{2\sqrt{x} \cos^2(\sqrt{x})}$
7	2x	30	$\frac{1}{2x\sqrt{\ln(x)}}$	53	$\frac{-2(x+1) \cos(x+1)^2}{\operatorname{sen}^2(x+1)^2}$
8	4x ³	31	$\frac{-3e^x}{2\sqrt{e^x}}$	54	$\frac{-3}{\sqrt{1-(2+3x)^2}}$
9	8x ⁷	32	$\ln 2 (2x+4) 2^{x^2+4x}$	55	$\frac{2}{\sqrt{1-(2x+3)^2}}$
10	10x ⁹	33	$\frac{3\sqrt{x} \ln 3}{2\sqrt{x}}$	56	$\frac{-2}{4x^2 - 4x + 2}$
11	-3x ² + 2	34	$\frac{e^{\operatorname{tag}(x)}}{\cos^2(x)}$	57	$\frac{3x^2 - 6x - 1}{(x+3x^2)^2}$
12	10x - 3	35	$\frac{e^{\ln(x)}}{x}$	58	$\frac{-12x}{(x^2 - 3)^2}$
13	6x + 2	36	$\frac{6x}{3x^2+1} \log_2 e$	59	$\frac{3x - 3\cos(x)}{9x^2 \cos^2 x}$
14	$\frac{3}{2}x^2 + 1$	37	$\frac{\cos(x)}{\operatorname{sen}(x)} \log_3 e$	60	$\frac{-1}{\operatorname{sen}^2(x)}$
15	-2x ⁵ + 3	38	$\frac{-1}{\operatorname{sen}(x)\cos(x)}$	61	$\frac{1 + \operatorname{sen} x \cos x}{\cos^2(x)} e^x$
16	4(x - 5) ³	39	$\frac{-3}{(x+1)(x-2)}$	62	$\frac{1}{1+x^2} \ln x + \frac{\operatorname{arctg} x}{x}$
17	3(x - 5) ²	40	$\frac{1}{2x}$	63	$\frac{\operatorname{sen} x}{\cos^2(x)} \sqrt{x} + \frac{\operatorname{arcsen} x}{2\sqrt{x}}$
18	6(3x - 1)	41	$\frac{\ln(x) - 1}{(\ln x)^2}$	64	$\frac{2x + \operatorname{arcsen}(x)}{2\sqrt{x} \sqrt{1-x^2}}$
19	20x (2x ² + 1) ⁴	42	$\frac{x - (x+1) \ln(x+1)}{x^2(x+1)}$	65	$\operatorname{Ln} x + 1$
20	$\frac{5(\ln(x))^4}{x}$	43	$\frac{x}{e^{x+1}} \frac{1}{(x+1)^2}$	66	$\cos(x) - x \operatorname{sen}(x)$
21	5 cos(x) (sen(x)) ⁴	44	2 sen(x) cos(x)	67	$\frac{1}{2x(x+1)}$
22	$f(x) = \frac{-1}{x^2}$	45	2x cos(x ²)	68	$\frac{2}{(e^x + e^{-x})^2}$
23	$f(x) = \frac{-6}{x^7}$	46	-sen(x) cos(cos(x))		