# Studio del grafico di funzione (funzioni più impegnative)

PASSED

studiare il grafico delle seguenti funzioni di vario tipo

| | | | |
|---|---|---|---|
| 1 | $y = \sqrt[3]{(x-2)(x-1)^2}$ | 2 | $y = x^2\, e^{-x}$ |
| 3 | $y = \sqrt[3]{x^3+1}$ | 4 | $y = \log_{\frac{1}{3}} \frac{1-x}{x+1}$ |
| 5 | $y = (x^2-1)\, e^x$ | 6 | $y = \frac{cos^2 x}{1+2\, sinx}$ |
| 7 | $y = \frac{\lvert 2-x\rvert}{\sqrt{x^2-5x+6}}$ | 8 | $y = \frac{x^3}{2x^2-1}$ |
| 9 | $y = \frac{x^2}{x^2-\lvert x+2\rvert}$ | 10 | $y = \arcsin\sqrt{1-x^2}$ |
| 11 | $y = x\sqrt{\frac{x}{4-x}}$ | 12 | $y = \sqrt{\frac{1-\sin x}{1+\sin x}}$ |
| 13 | $y = \sqrt{x}\, e^{-\frac{1}{x}}$ | 14 | $y = -\frac{1}{3}x^3 + 5x^2 + 5x$ |
| 15 | $y = ln\frac{x^2-9}{1-\lvert x\rvert}$ | 16 | $y = \frac{x^2-1}{\lvert 2x-1\rvert} + \frac{\lvert x-3\rvert}{2x-1}$ |
| 17 | $y = \frac{e^x-2}{\sqrt{3-x}}$ | 18 | $y = -1 - log_3 \frac{x^2-2}{x^2-1}$ |
| 19 | $y = ln\frac{1-\sin x}{2\cos x - 1}$ | 20 | $y = e^{\frac{2}{\lvert x-2\rvert - 2}}$ |

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| 21 | $y = \frac{x^2 - 5}{x - 1}$ | 22 | $y = x^3 - 7x - 6$ |
| 23 | $y = \frac{\lvert x \rvert - 1}{\sqrt{x^2 - 1}}$ | 24 | $y = \frac{2}{1 - ln\,(x - 1)}$ |
| 25 | $y = \frac{3x + 1}{2x^2 + 1}$ | 26 | $y = x\, e^{\frac{x-1}{x+1}}$ |
| 27 | $y = \frac{x\, lnx}{x^2 - 9}$ | 28 | $y = \frac{1 - \cos x}{\sin x}$ |
| 29 | $y = \frac{e^x - 2}{e^x - 1}$ | 30 | $y = x^4 - 5x^2 + 4$ |
| 31 | $y = \frac{ln\,(x - 2)}{2 - ln\,(x - 2)}$ | 32 | $y = \frac{e^x - 1}{\lvert x - 1 \rvert}$ |
| 33 | $y = arctan\frac{x^2 - 1}{x}$ | 34 | $y = \sqrt{2 - x^3}$ |
| 35 | $y = \frac{3x^2 + 1}{2x^3 - x}$ | 36 | $y = x - \sqrt{1 - x^2}$ |
| 37 | $y = \frac{\tan x}{\tan x - \sqrt{3}}$ | 38 | $y = \left\lvert \frac{x^2 - 4}{1 - x} \right\rvert$ |
| 39 | $y = e^{\frac{x+1}{x}}$ | 40 | $y = \frac{x^2 - 1}{x^3 - 8}$ |
| 41 | $y = \frac{x + e^{-x}}{x - e^{-x}}$ | 42 | $y = ln\,(e^{x^2} - 1)$ |

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| 43 | $y = x - \sqrt{\frac{1}{2-x}}$ | 44 | $y = \frac{2x^3}{2x^2 - x - 1}$ |
| 45 | $y = \frac{\sin 2x}{1 - \sin x}$ | 46 | $y = x^2 e^{-x^2}$ |
| 47 | $y = \sqrt{\frac{x^2 - 1}{2x}}$ | 48 | $y = ln\frac{2x^2 + 11}{x^2 - 4}$ |
| 49 | $y = e^{\frac{x}{2-x^2}}$ | 50 | $y = \frac{2x^2 + 2x + 8}{x^2 - 4}$ |
| 51 | $y = arcsin\frac{1 - x^2}{x^2 - 4}$ | 52 | $y = \frac{x^2 - x}{2x + 1}$ |
| 53 | $y = x\, e^{-2x} + 1$ | 54 | $y = x + x^3 - x^4$ |
| 55 | $y = \frac{1}{4x^4 - 5x^2 + 1}$ | 56 | $y = \frac{x^2}{x^2 - 1}$ |
| 57 | $y = \frac{\sqrt{x^2 - 1}}{x^2 - 4}$ | 58 | $y = \frac{1 + \sqrt[3]{x}}{2 - \sqrt[3]{x}}$ |
| 59 | $y = \frac{1 + \sqrt[5]{x^3}}{1 - \sqrt[5]{x^3}}$ | 60 | $y = x\sqrt{x} - \frac{3}{2}\sqrt{x^2 + x - 3}$ |
| 61 | $y = \sqrt[3]{x}\, e^{\frac{1}{x}}$ | 62 | $y = 2\sqrt{2}x - ln(x^2 - 1)$ |
| 63 | $y = 6x\, lnx - (3x - 2)[\ln(3x - 2) + 1] - \frac{4\ln 4}{3}$ | 64 | $y = x\, lnx - \frac{x}{lnx} - 2x$ |

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| 65 | $y = 1 - x + \left(\sqrt[3]{x^2} - 1\right)\sqrt{\sqrt[3]{x^2} + 1}$ | 66 | $y = (4 + lnx)\, x\, ln^2 x$ |
| 67 | $y = e^{\frac{sinx+1}{sinx-1}} - 1$ | 68 | $y = x^{\frac{3}{4\, ln^2 x}}$ |
| 69 | $y = x\sqrt{x}\sqrt[3]{ln^2 x}$ | 70 | $y = \arctan x - \frac{1}{2}x$ |
| 71 | $y = e^{\frac{1}{4}tanx}\, cosx$ | 72 | $y = 2x - arctan\left(\frac{4x-1}{4x} - \frac{1}{4\lvert x\rvert}\right)$ |
| 73 | $y = e^{-x}\,(e^x - 1)^{\frac{1}{3}}$ | 74 | $y = \frac{2x-1}{\sqrt{1 - \left\lvert\frac{1-x}{x}\right\rvert}}$ |
| 75 | $y = 6\, sinx - \ln\left(sinx + \sqrt{sin^2 x - \frac{1}{4}}\right)$ | 76 | $y = e^{\arctan\frac{1+x}{1+\lvert x\rvert} - \frac{1}{2}ln(1+\lvert x\rvert - x + x^2)}$ |
| 77 | $y = \frac{1}{2}(x-2)^2 + 2x + 2ln\lvert x-3\rvert$ | 78 | $y = \frac{1}{\sqrt{x + \lvert x^2 - x\rvert}}$ |
| 79 | $y = \sqrt{x^2+1} + arcsin\frac{1}{\sqrt{\frac{1}{x^2}+1}}$ | 80 | $y = 3x - 2x\sqrt{5\,\lvert lnx\rvert - 4\, lnx}$ |
| 81 | $y = \lvert x^2 - 2x\rvert\, e^x$ | 82 | $y = x^2\, e^{\frac{\lvert x\rvert - 1}{x}}$ |
| 83 | $y = \frac{1}{x\lvert x\rvert}\, ln^3\lvert x\rvert$ | 84 | $y = e^{sinx}\, \lvert sinx\rvert$ |

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| 85 | $y = e^{sinx}\ sin\|x\|$ | 86 | $y = e^{\frac{2\ sinx+1}{2\ sinx-1}} - 1$ |
| 87 | $y = 1 + \frac{2^{x+1}}{2^x - 1}$ | 88 | $y = x^{ln^2 x} - 1$ |
| 89 | $y = ln\left(\sqrt{x^2+1} - x\right) - 2arctan\frac{1}{x}$ | 90 | $y = e^{\frac{ln^2 x-2}{lnx-2}} - 2e^4$ |
| 91 | $y = arctan\frac{lnx-1}{lnx+1} + \frac{1}{2}\ln(ln^2 x + 1) + \frac{\pi}{2}$ | 92 | $y = \frac{1}{2}(x-2)^2 + 2x + 2ln\|x-3\|$ |
| 93 | $y = arcsin\frac{e^x}{3-e^x} + \ln\frac{3+\sqrt{9-6e^x}}{3-\sqrt{9-6e^x}} + \frac{3}{5}x$ | 94 | $y = \arcsin 2x\sqrt{1-x^2} + \sqrt{1-x^2} + \sqrt{3}(1-x)$ |
| 95 | $y = \frac{2x}{\sqrt{x^2+1}} - ln\left(x + \sqrt{x^2+1}\right) - 2\frac{x+1}{\|x+1\|}$ | 96 | $y = x\left\|ln\|x\|\right\| - 2\|x\|ln^2\|x\|$ |
| 97 | $y = arctan\frac{e^x-1}{e^x-2} + 2\|x\| + \frac{\pi}{2}$ | 98 | $y = \frac{1}{\sqrt{\|lnx\|}} \cdot \left(2 - \frac{1}{lnx}\right)$ |
| 99 | $y = \sqrt{\|x\|} - arcsin\frac{x-1}{\|x\|+1}$ | 100 | $y = \frac{1+\|lnx\|}{1-\|lnx\|}$ |
| 101 | $y = (x-1)\sqrt{\left(1+\frac{1}{2}x\right)(\|x\|-x)} - arcsin\frac{x-\|x\|+2}{x+\|x\|+2} + 2$ | 102 | $y = \left\|\frac{1-x}{1+x}\right\| ln\left\|\frac{1-x}{1+x}\right\|$ |

studiare il grafico delle seguenti funzioni anche **iperboliche**

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|---|---|---|---|
| 103 | $y = e^{\sqrt{tanhx}}$ | 104 | $y = e^{\sqrt{\arctan x+3}}$ |
| 105 | $y = \left(\frac{1}{2}\right)^{tanhx+2}$ | 106 | $y = \ln\left(tanhx + 3\right)$ |
| 107 | $y = e^{\tanh\frac{x}{x-1}}$ | 108 | $y = e^{\frac{1}{arctanh(e^x-1)}}$ |

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| 109 | $y = \frac{x-1}{e^x}$ | 110 | $y = \frac{e^{-x}}{1+x^2}$ |
| 111 | $y = e^x\,(x^2 - 4x + 3)$ | 112 | $y = \sqrt{x}\,e^{-x}$ |
| 113 | $y = \frac{1}{x}\,e^{\frac{1}{x}}$ | 114 | $y = \frac{x\,e^x}{\sqrt{2x-1}}$ |
| 115 | $y = \frac{1}{e^x\,lnx}$ | 116 | $y = x\,e^{\frac{x-1}{x+1}}$ |
| 117 | $y = arcsin\frac{x}{x+1}$ | 118 | $y = arctan\frac{1}{1+lnx}$ |
| 119 | $y = arctan\frac{x+2}{3-x}$ | 120 | $y = arctan\frac{x^2-4}{x^2-1}$ |
| 121 | $y = \ln\,(e^{2x} - 3e^x - 4)$ | 122 | $y = x^2\,e^{\frac{\lvert x\rvert -1}{x}}$ |
| 123 | $y = e^{-\frac{1}{x^2-1}}$ | 124 | $y = e^{\frac{1}{\arctan x^2}}$ |
| 125 | $y = e^{\tanh\frac{x}{x-1}}$ | 126 | $y = e^{\frac{1}{arctanh(e^x-1)}}$ |
| 127 | $y = e^{\sqrt{tanhx+3}}$ | 128 | $y = arctan\frac{e^x-1}{e^x}$ |
| 129 | $y = \ln\sqrt{tanhx+2}$ | 130 | $y = tanh\big(ln(e^x-1)\big)$ |
| 131 | $y = arctan\sqrt{e^x-1}$ | 132 | $y = ln\frac{2^x-1}{2^x+1}$ |