

14.8 a) $(u \circ v)(0) = u(v(0)) = u(3) = 5$
 b) $(u \circ v)(-3) = u(v(-3)) = u(4) = 7$

16.6 $f(x) = x\sqrt{x^2+3}$, $f(-1) = -1 \cdot \sqrt{(-1)^2+3} = -\sqrt{4} = -2 = f(-1, -2)$
 $= x(x^2+3)^{\frac{1}{2}}$
 $f'(x) = 1 \cdot (x^2+3)^{\frac{1}{2}} + x \cdot \frac{1}{2}(x^2+3)^{-\frac{1}{2}} \cdot 2x$
 $f'(-1) = \sqrt{(-1)^2+3} + \frac{(-1)^2}{\sqrt{(-1)^2+3}} = 2 + \frac{1}{2} = \frac{5}{2}$
 Tangente: $y - (-2) = \frac{5}{2}(x - (-1)) \Rightarrow y = \frac{5}{2}x + \frac{1}{2}$
 $x=0: y = \frac{5}{2} \cdot 0 + \frac{1}{2} = \frac{1}{2} \Rightarrow$ Punkt: $(0, \frac{1}{2})$

14.20 $f(x) = 5x+3$, $g(x) = 3x+8$
 $(f \circ g)(x) = f(g(x)) = f(3x+8) = 5(3x+8) + 3 = 15x + 5x + 3 = 20x + 3$
 $(g \circ f)(x) = g(f(x)) = g(5x+3) = 3(5x+3) + 8 = 15x + 9 + 8 = 23x + 17$
 $\Rightarrow 15x + 58 + 3 = 15x + 9 + 8 \Rightarrow 48 = 6 \Rightarrow x = \frac{8}{2} = 4$

16.14 $f(x) = \sqrt{4x+1} = (4x+1)^{\frac{1}{2}}$
 $f'(2) = \sqrt{4 \cdot 2 + 1} = \sqrt{5} = 3 \Rightarrow$ Punkte: $(2, 3)$
 $f'(x) = \frac{1}{2}(4x+1)^{-\frac{1}{2}} \cdot 4 = \frac{2}{\sqrt{4x+1}} \Rightarrow f'_x = f'(2) = \frac{2}{\sqrt{4 \cdot 2 + 1}} = \frac{2}{\sqrt{5}}$
 $f'_x \cdot f'_y = -1 \Rightarrow f'_y = -\frac{1}{f'_x} = -\frac{\sqrt{5}}{2}$
 Normalen: $y - 3 = -\frac{\sqrt{5}}{2}(x - 2) \Rightarrow y = -\frac{\sqrt{5}}{2}x + 6$

14.22 Platz, f je g ableiten, Wolvenstein
Werte $g \circ f$ ableiten, Kommutativ
 Tol. $0 \leq a < b \Rightarrow f(a) > f(b) \Leftrightarrow (f \circ g \circ f)(a) > (f \circ g \circ f)(b)$
 $(g \circ f)(a) = g(f(a)) < g(f(b)) = (g \circ f)(b)$
 \Rightarrow g ableiten, Kommutativ
 \Rightarrow g ableiten, Kommutativ

16.15 $f(x) = (x+1) \cdot \sqrt[3]{x^2-4} = 0$
 $\Rightarrow x+1=0$ Kritik $\frac{3}{3} \sqrt{x^2-4} = 0 \quad | \cdot 3$
 $\Rightarrow x = -1$ Kritik $\frac{x^2-4}{3} = 0 \quad | \cdot 3 \Rightarrow x^2-4=0 \Rightarrow x = \pm 2$
 $f'(x) = 1 \cdot \sqrt[3]{x^2-4} + (x+1) \cdot \frac{1}{3}(x^2-4)^{-\frac{2}{3}} \cdot 2x$
 $f'(-1) = \sqrt[3]{-1} + 0 = -1 = f'_x$
 Tangente: $y - 0 = -1 \cdot (x - (-1)) \Rightarrow y = -x - 1$
 $x=0: y = -0 - 1 = -1$
 \Rightarrow Punkte $(-1, 0)$ gerade Tangente Wolvenstein
ableiten Punkte $(0, -1)$

15.1 a) $f'(x) = D(5x^2+1)^4 = 4(5x^2+1)^3 \cdot 10x = 40x(5x^2+1)^3$
 b) $g'(x) = D(x^3-2x^2)^6 = 6(x^3-2x^2)^5 \cdot (3x^2-4x)$
 15.3 $f'(x) = D \frac{1}{(4x^2+12x)^6} = (4x^2+12x)^{-6} = -6(4x^2+12x)^{-7} \cdot (8x+12)$
 $= -\frac{48x+72}{(4x^2+12x)^7}$, $x \neq 0, x \neq -3$

17.3 $f(x) = 3 - x^2$
 $f'(x) = -2x$
 $f'(1) = -2 < 0$, $f'(2) = -4 < 0$
 $f'(x) = -2x = 0 \Rightarrow x = 0$
 $f(0) = 3 - 0 = 3$
 $f(1) = 3 - 1 = 2$
 $f(2) = 3 - 4 = -1$
 $f(3) = 3 - 9 = -6$
 $f(4) = 3 - 16 = -13$
 $f(5) = 3 - 25 = -22$
 $f(6) = 3 - 36 = -33$
 $f(7) = 3 - 49 = -46$
 $f(8) = 3 - 64 = -61$
 $f(9) = 3 - 81 = -78$
 $f(10) = 3 - 100 = -97$
 $f(11) = 3 - 121 = -118$
 $f(12) = 3 - 144 = -141$
 $f(13) = 3 - 169 = -166$
 $f(14) = 3 - 196 = -193$
 $f(15) = 3 - 225 = -222$
 $f(16) = 3 - 256 = -253$
 $f(17) = 3 - 289 = -286$
 $f(18) = 3 - 324 = -321$
 $f(19) = 3 - 361 = -358$
 $f(20) = 3 - 400 = -397$
 $f(21) = 3 - 441 = -438$
 $f(22) = 3 - 484 = -481$
 $f(23) = 3 - 529 = -526$
 $f(24) = 3 - 576 = -573$
 $f(25) = 3 - 625 = -622$
 $f(26) = 3 - 676 = -673$
 $f(27) = 3 - 729 = -726$
 $f(28) = 3 - 784 = -781$
 $f(29) = 3 - 841 = -838$
 $f(30) = 3 - 900 = -897$
 $f(31) = 3 - 961 = -958$
 $f(32) = 3 - 1024 = -1021$
 $f(33) = 3 - 1089 = -1086$
 $f(34) = 3 - 1156 = -1153$
 $f(35) = 3 - 1225 = -1222$
 $f(36) = 3 - 1296 = -1293$
 $f(37) = 3 - 1369 = -1366$
 $f(38) = 3 - 1444 = -1441$
 $f(39) = 3 - 1521 = -1518$
 $f(40) = 3 - 1600 = -1597$
 $f(41) = 3 - 1681 = -1678$
 $f(42) = 3 - 1764 = -1761$
 $f(43) = 3 - 1849 = -1846$
 $f(44) = 3 - 1936 = -1933$
 $f(45) = 3 - 2025 = -2022$
 $f(46) = 3 - 2116 = -2113$
 $f(47) = 3 - 2209 = -2206$
 $f(48) = 3 - 2304 = -2301$
 $f(49) = 3 - 2401 = -2408$
 $f(50) = 3 - 2500 = -2517$
 $f(51) = 3 - 2601 = -2628$
 $f(52) = 3 - 2704 = -2741$
 $f(53) = 3 - 2809 = -2856$
 $f(54) = 3 - 2916 = -2973$
 $f(55) = 3 - 3025 = -3092$
 $f(56) = 3 - 3136 = -3213$
 $f(57) = 3 - 3249 = -3336$
 $f(58) = 3 - 3364 = -3461$
 $f(59) = 3 - 3481 = -3588$
 $f(60) = 3 - 3600 = -3717$
 $f(61) = 3 - 3721 = -3848$
 $f(62) = 3 - 3844 = -3981$
 $f(63) = 3 - 3969 = -4116$
 $f(64) = 3 - 4096 = -4253$
 $f(65) = 3 - 4225 = -4392$
 $f(66) = 3 - 4356 = -4533$
 $f(67) = 3 - 4489 = -4676$
 $f(68) = 3 - 4624 = -4821$
 $f(69) = 3 - 4761 = -4968$
 $f(70) = 3 - 4900 = -5117$
 $f(71) = 3 - 5041 = -5268$
 $f(72) = 3 - 5184 = -5421$
 $f(73) = 3 - 5329 = -5576$
 $f(74) = 3 - 5476 = -5733$
 $f(75) = 3 - 5625 = -5892$
 $f(76) = 3 - 5776 = -6053$
 $f(77) = 3 - 5929 = -6216$
 $f(78) = 3 - 6084 = -6381$
 $f(79) = 3 - 6241 = -6548$
 $f(80) = 3 - 6400 = -6717$
 $f(81) = 3 - 6561 = -6888$
 $f(82) = 3 - 6724 = -7061$
 $f(83) = 3 - 6889 = -7236$
 $f(84) = 3 - 7056 = -7413$
 $f(85) = 3 - 7225 = -7592$
 $f(86) = 3 - 7396 = -7773$
 $f(87) = 3 - 7569 = -7956$
 $f(88) = 3 - 7744 = -8141$
 $f(89) = 3 - 7921 = -8328$
 $f(90) = 3 - 8100 = -8517$
 $f(91) = 3 - 8281 = -8708$
 $f(92) = 3 - 8464 = -8901$
 $f(93) = 3 - 8649 = -9096$
 $f(94) = 3 - 8836 = -9293$
 $f(95) = 3 - 9025 = -9492$
 $f(96) = 3 - 9216 = -9693$
 $f(97) = 3 - 9409 = -9896$
 $f(98) = 3 - 9604 = -10101$
 $f(99) = 3 - 9801 = -10308$
 $f(100) = 3 - 10000 = -10517$

15.5 $f(x) = (4x^2-10x)^4$
 $f'(x) = 4(4x^2-10x)^3 \cdot (8x-10) = 0$
 $\Rightarrow (4x^2-10x)^3 = 0 \quad | \sqrt[3]{\quad}$ Kritik $8x-10=0$
 $\Rightarrow 4x^2-10x=0$ Kritik $x = \frac{10}{8}$
 $\Rightarrow 2x(2x-5)=0$ Kritik $x = \frac{5}{2}$ Kritik $x = \frac{5}{2}$ Kritik $x = \frac{5}{2}$

17.3 $f(x) = \sqrt{x^2-4}$
 $f'(x) = \frac{1}{2}(x^2-4)^{-\frac{1}{2}} \cdot 2x = \frac{x}{\sqrt{x^2-4}}$
 $f'(1) = \frac{1}{\sqrt{1-4}} = \frac{1}{\sqrt{-3}}$
 $f'(2) = \frac{2}{\sqrt{4-4}} = \frac{2}{0}$
 $f'(3) = \frac{3}{\sqrt{9-4}} = \frac{3}{\sqrt{5}}$
 $f'(4) = \frac{4}{\sqrt{16-4}} = \frac{4}{\sqrt{12}} = \frac{2}{\sqrt{3}}$
 $f'(5) = \frac{5}{\sqrt{25-4}} = \frac{5}{\sqrt{21}}$
 $f'(6) = \frac{6}{\sqrt{36-4}} = \frac{6}{\sqrt{32}} = \frac{3}{2\sqrt{2}}$
 $f'(7) = \frac{7}{\sqrt{49-4}} = \frac{7}{\sqrt{45}} = \frac{7}{3\sqrt{5}}$
 $f'(8) = \frac{8}{\sqrt{64-4}} = \frac{8}{\sqrt{60}} = \frac{4}{\sqrt{15}}$
 $f'(9) = \frac{9}{\sqrt{81-4}} = \frac{9}{\sqrt{77}}$
 $f'(10) = \frac{10}{\sqrt{100-4}} = \frac{10}{\sqrt{96}} = \frac{5}{2\sqrt{6}}$
 $f'(11) = \frac{11}{\sqrt{121-4}} = \frac{11}{\sqrt{117}} = \frac{11}{3\sqrt{13}}$
 $f'(12) = \frac{12}{\sqrt{144-4}} = \frac{12}{\sqrt{140}} = \frac{3}{\sqrt{35}}$
 $f'(13) = \frac{13}{\sqrt{169-4}} = \frac{13}{\sqrt{165}} = \frac{13}{3\sqrt{55}}$
 $f'(14) = \frac{14}{\sqrt{196-4}} = \frac{14}{\sqrt{192}} = \frac{7}{2\sqrt{48}} = \frac{7}{4\sqrt{3}}$
 $f'(15) = \frac{15}{\sqrt{225-4}} = \frac{15}{\sqrt{221}}$
 $f'(16) = \frac{16}{\sqrt{256-4}} = \frac{16}{\sqrt{252}} = \frac{4}{\sqrt{63}} = \frac{4}{3\sqrt{7}}$
 $f'(17) = \frac{17}{\sqrt{289-4}} = \frac{17}{\sqrt{285}} = \frac{17}{3\sqrt{95}}$
 $f'(18) = \frac{18}{\sqrt{324-4}} = \frac{18}{\sqrt{320}} = \frac{9}{2\sqrt{80}} = \frac{9}{4\sqrt{5}}$
 $f'(19) = \frac{19}{\sqrt{361-4}} = \frac{19}{\sqrt{357}} = \frac{19}{3\sqrt{119}}$
 $f'(20) = \frac{20}{\sqrt{400-4}} = \frac{20}{\sqrt{396}} = \frac{5}{\sqrt{99}} = \frac{5}{3\sqrt{11}}$
 $f'(21) = \frac{21}{\sqrt{441-4}} = \frac{21}{\sqrt{437}}$
 $f'(22) = \frac{22}{\sqrt{484-4}} = \frac{22}{\sqrt{480}} = \frac{11}{2\sqrt{120}} = \frac{11}{4\sqrt{30}}$
 $f'(23) = \frac{23}{\sqrt{529-4}} = \frac{23}{\sqrt{525}} = \frac{23}{3\sqrt{175}} = \frac{23}{15\sqrt{7}}$
 $f'(24) = \frac{24}{\sqrt{576-4}} = \frac{24}{\sqrt{572}} = \frac{6}{\sqrt{143}}$
 $f'(25) = \frac{25}{\sqrt{625-4}} = \frac{25}{\sqrt{621}} = \frac{25}{3\sqrt{69}}$
 $f'(26) = \frac{26}{\sqrt{676-4}} = \frac{26}{\sqrt{672}} = \frac{13}{\sqrt{168}} = \frac{13}{4\sqrt{42}}$
 $f'(27) = \frac{27}{\sqrt{729-4}} = \frac{27}{\sqrt{725}} = \frac{27}{5\sqrt{145}} = \frac{27}{15\sqrt{29}}$
 $f'(28) = \frac{28}{\sqrt{784-4}} = \frac{28}{\sqrt{780}} = \frac{7}{\sqrt{195}} = \frac{7}{3\sqrt{65}}$
 $f'(29) = \frac{29}{\sqrt{841-4}} = \frac{29}{\sqrt{837}} = \frac{29}{3\sqrt{93}}$
 $f'(30) = \frac{30}{\sqrt{900-4}} = \frac{30}{\sqrt{896}} = \frac{15}{2\sqrt{224}} = \frac{15}{4\sqrt{56}} = \frac{15}{8\sqrt{7}}$
 $f'(31) = \frac{31}{\sqrt{961-4}} = \frac{31}{\sqrt{957}}$
 $f'(32) = \frac{32}{\sqrt{1024-4}} = \frac{32}{\sqrt{1020}} = \frac{8}{\sqrt{255}} = \frac{8}{3\sqrt{55}}$
 $f'(33) = \frac{33}{\sqrt{1089-4}} = \frac{33}{\sqrt{1085}} = \frac{33}{3\sqrt{1205}} = \frac{11}{\sqrt{1205}}$
 $f'(34) = \frac{34}{\sqrt{1156-4}} = \frac{34}{\sqrt{1152}} = \frac{17}{\sqrt{288}} = \frac{17}{6\sqrt{48}} = \frac{17}{8\sqrt{3}}$
 $f'(35) = \frac{35}{\sqrt{1225-4}} = \frac{35}{\sqrt{1221}} = \frac{35}{3\sqrt{1357}} = \frac{35}{15\sqrt{271}}$
 $f'(36) = \frac{36}{\sqrt{1296-4}} = \frac{36}{\sqrt{1292}} = \frac{9}{\sqrt{323}} = \frac{9}{\sqrt{17 \cdot 19}}$
 $f'(37) = \frac{37}{\sqrt{1369-4}} = \frac{37}{\sqrt{1365}} = \frac{37}{3\sqrt{1515}} = \frac{37}{15\sqrt{303}}$
 $f'(38) = \frac{38}{\sqrt{1444-4}} = \frac{38}{\sqrt{1440}} = \frac{19}{\sqrt{360}} = \frac{19}{6\sqrt{40}} = \frac{19}{12\sqrt{10}}$
 $f'(39) = \frac{39}{\sqrt{1521-4}} = \frac{39}{\sqrt{1517}}$
 $f'(40) = \frac{40}{\sqrt{1600-4}} = \frac{40}{\sqrt{1596}} = \frac{10}{\sqrt{399}} = \frac{10}{3\sqrt{133}}$
 $f'(41) = \frac{41}{\sqrt{1681-4}} = \frac{41}{\sqrt{1677}} = \frac{41}{3\sqrt{1861}} = \frac{41}{15\sqrt{3722}}$
 $f'(42) = \frac{42}{\sqrt{1764-4}} = \frac{42}{\sqrt{1760}} = \frac{21}{\sqrt{440}} = \frac{21}{2\sqrt{110}} = \frac{21}{2 \cdot 2\sqrt{55}} = \frac{21}{4\sqrt{55}}$
 $f'(43) = \frac{43}{\sqrt{1849-4}} = \frac{43}{\sqrt{1845}} = \frac{43}{3\sqrt{205}}$
 $f'(44) = \frac{44}{\sqrt{1936-4}} = \frac{44}{\sqrt{1932}} = \frac{11}{\sqrt{483}} = \frac{11}{3\sqrt{161}}$
 $f'(45) = \frac{45}{\sqrt{2025-4}} = \frac{45}{\sqrt{2021}}$
 $f'(46) = \frac{46}{\sqrt{2116-4}} = \frac{46}{\sqrt{2112}} = \frac{23}{\sqrt{528}} = \frac{23}{2\sqrt{132}} = \frac{23}{2 \cdot 2\sqrt{33}} = \frac{23}{4\sqrt{33}}$
 $f'(47) = \frac{47}{\sqrt{2209-4}} = \frac{47}{\sqrt{2205}} = \frac{47}{3\sqrt{245}} = \frac{47}{15\sqrt{49}} = \frac{47}{15 \cdot 7} = \frac{47}{105}$
 $f'(48) = \frac{48}{\sqrt{2304-4}} = \frac{48}{\sqrt{2300}} = \frac{12}{\sqrt{575}} = \frac{12}{5\sqrt{23}} = \frac{12}{5 \cdot \sqrt{23}}$
 $f'(49) = \frac{49}{\sqrt{2401-4}} = \frac{49}{\sqrt{2397}} = \frac{49}{3\sqrt{2663}} = \frac{49}{15\sqrt{5326}}$
 $f'(50) = \frac{50}{\sqrt{2500-4}} = \frac{50}{\sqrt{2496}} = \frac{25}{\sqrt{624}} = \frac{25}{2\sqrt{156}} = \frac{25}{2 \cdot 2\sqrt{39}} = \frac{25}{4\sqrt{39}}$
 $f'(51) = \frac{51}{\sqrt{2601-4}} = \frac{51}{\sqrt{2597}}$
 $f'(52) = \frac{52}{\sqrt{2704-4}} = \frac{52}{\sqrt{2700}} = \frac{13}{\sqrt{675}} = \frac{13}{3\sqrt{75}} = \frac{13}{3 \cdot 3\sqrt{5}} = \frac{13}{9\sqrt{5}}$
 $f'(53) = \frac{53}{\sqrt{2809-4}} = \frac{53}{\sqrt{2805}} = \frac{53}{3\sqrt{3115}} = \frac{53}{15\sqrt{623}}$
 $f'(54) = \frac{54}{\sqrt{2916-4}} = \frac{54}{\sqrt{2912}} = \frac{27}{\sqrt{728}} = \frac{27}{2\sqrt{182}} = \frac{27}{2 \cdot 2\sqrt{91}} = \frac{27}{4\sqrt{91}}$
 $f'(55) = \frac{55}{\sqrt{3025-4}} = \frac{55}{\sqrt{3021}}$
 $f'(56) = \frac{56}{\sqrt{3136-4}} = \frac{56}{\sqrt{3132}} = \frac{14}{\sqrt{783}} = \frac{14}{3\sqrt{87}}$
 $f'(57) = \frac{57}{\sqrt{3249-4}} = \frac{57}{\sqrt{3245}} = \frac{57}{3\sqrt{3605}} = \frac{57}{15\sqrt{721}}$
 $f'(58) = \frac{58}{\sqrt{3364-4}} = \frac{58}{\sqrt{3360}} = \frac{29}{\sqrt{840}} = \frac{29}{2\sqrt{210}} = \frac{29}{2 \cdot 2\sqrt{105}} = \frac{29}{4\sqrt{105}}$
 $f'(59) = \frac{59}{\sqrt{3481-4}} = \frac{59}{\sqrt{3477}}$
 $f'(60) = \frac{60}{\sqrt{3600-4}} = \frac{60}{\sqrt{3596}} = \frac{15}{\sqrt{899}} = \frac{15}{\sqrt{11 \cdot 81}}$
 $f'(61) = \frac{61}{\sqrt{3721-4}} = \frac{61}{\sqrt{3717}} = \frac{61}{3\sqrt{413}}$
 $f'(62) = \frac{62}{\sqrt{3844-4}} = \frac{62}{\sqrt{3840}} = \frac{31}{\sqrt{960}} = \frac{31}{2\sqrt{240}} = \frac{31}{2 \cdot 2\sqrt{60}} = \frac{31}{4\sqrt{15}}$
 $f'(63) = \frac{63}{\sqrt{3969-4}} = \frac{63}{\sqrt{3965}} = \frac{63}{3\sqrt{4405}} = \frac{63}{15\sqrt{881}}$
 $f'(64) = \frac{64}{\sqrt{4096-4}} = \frac{64}{\sqrt{4092}} = \frac{16}{\sqrt{1023}} = \frac{16}{3\sqrt{113}}$
 $f'(65) = \frac{65}{\sqrt{4225-4}} = \frac{65}{\sqrt{4221}}$
 $f'(66) = \frac{66}{\sqrt{4356-4}} = \frac{66}{\sqrt{4352}} = \frac{33}{\sqrt{1088}} = \frac{33}{2\sqrt{272}} = \frac{33}{2 \cdot 2\sqrt{68}} = \frac{33}{4\sqrt{17}}$
 $f'(67) = \frac{67}{\sqrt{4489-4}} = \frac{67}{\sqrt{4485}} = \frac{67}{3\sqrt{4985}} = \frac{67}{15\sqrt{997}}$
 $f'(68) = \frac{68}{\sqrt{4624-4}} = \frac{68}{\sqrt{4620}} = \frac{17}{\sqrt{1155}} = \frac{17}{3\sqrt{1275}} = \frac{17}{15\sqrt{255}}$
 $f'(69) = \frac{69}{\sqrt{4761-4}} = \frac{69}{\sqrt{4757}}$
 $f'(70) = \frac{70}{\sqrt{4900-4}} = \frac{70}{\sqrt{4896}} = \frac{35}{\sqrt{1224}} = \frac{35}{2\sqrt{306}} = \frac{35}{2 \cdot 2\sqrt{76.5}} = \frac{35}{4\sqrt{153}}$
 $f'(71) = \frac{71}{\sqrt{5041-4}} = \frac{71}{\sqrt{5037}}$
 $f'(72) = \frac{72}{\sqrt{5184-4}} = \frac{72}{\sqrt{5180}} = \frac{18}{\sqrt{1295}} = \frac{18}{5\sqrt{259}} = \frac{18}{5 \cdot \sqrt{259}}$
 $f'(73) = \frac{73}{\sqrt{5329-4}} = \frac{73}{\sqrt{5325}} = \frac{73}{3\sqrt{5915}} = \frac{73}{15\sqrt{1183}}$
 $f'(74) = \frac{74}{\sqrt{5476-4}} = \frac{74}{\sqrt{5472}} = \frac{37}{\sqrt{1368}} = \frac{37}{2\sqrt{342}} = \frac{37}{2 \cdot 2\sqrt{85.5}} = \frac{37}{4\sqrt{171}}$
 $f'(75) = \frac{75}{\sqrt{5625-4}} = \frac{75}{\sqrt{5621}}$
 $f'(76) = \frac{76}{\sqrt{5776-4}} = \frac{76}{\sqrt{5772}} = \frac{19}{\sqrt{1443}} = \frac{19}{3\sqrt{160.333...}} = \frac{19}{3 \cdot \sqrt{160.333...}}$
 $f'(77) = \frac{77}{\sqrt{5929-4}} = \frac{77}{\sqrt{5925}} = \frac{77}{3\sqrt{6585}} = \frac{77}{15\sqrt{1317}}$
 $f'(78) = \frac{78}{\sqrt{6084-4}} = \frac{78}{\sqrt{6080}} = \frac{39}{\sqrt{1520}} = \frac{39}{2\sqrt{380}} = \frac{39}{2 \cdot 2\sqrt{95}} = \frac{39}{4\sqrt{95}}$
 $f'(79) = \frac{79}{\sqrt{6241-4}} = \frac{79}{\sqrt{6237}}$
 $f'(80) = \frac{80}{\sqrt{6400-4}} = \frac{80}{\sqrt{6396}} = \frac{20}{\sqrt{1599}} = \frac{20}{3\sqrt{533}}$
 $f'(81) = \frac{81}{\sqrt{6561-4}} = \frac{81}{\sqrt{6557}}$
 $f'(82) = \frac{82}{\sqrt{6724-4}} = \frac{82}{\sqrt{6720}} = \frac{41}{\sqrt{1680}} = \frac{41}{2\sqrt{420}} = \frac{41}{2 \cdot 2\sqrt{105}} = \frac{41}{4\sqrt{105}}$
 $f'(83) = \frac{83}{\sqrt{6889-4}} = \frac{83}{\sqrt{6885}} = \frac{83}{3\sqrt{765}}$
 $f'(84) = \frac{84}{\sqrt{7056-4}} = \frac{84}{\sqrt{7052}} = \frac{21}{\sqrt{1763}} = \frac{21}{\sqrt{7 \cdot 251.857...}} = \frac{21}{\sqrt{7 \cdot 251.857...}}$
 $f'(85) = \frac{85}{\sqrt{7225-4}} = \frac{85}{\sqrt{7221}}$
 $f'(86) = \frac{86}{\sqrt{7396-4}} = \frac{86}{\sqrt{7392}} = \frac{43}{\sqrt{1848}} = \frac{43}{2\sqrt{462}} = \frac{43}{2 \cdot 2\sqrt{115.5}} = \frac{43}{4\sqrt{231}}$
 $f'(87) = \frac{87}{\sqrt{7569-4}} = \frac{87}{\sqrt{7565}} = \frac{87}{3\sqrt{8405}} = \frac{87}{15\sqrt{1681}}$
 $f'(88) = \frac{88}{\sqrt{7744-4}} = \frac{88}{\sqrt{7740}} = \frac{22}{\sqrt{1935}} = \frac{22}{3\sqrt{215}}$
 $f'(89) = \frac{89}{\sqrt{7921-4}} = \frac{89}{\sqrt{7917}}$
 $f'(90) = \frac{90}{\sqrt{8100-4}} = \frac{90}{\sqrt{8096}} = \frac{45}{\sqrt{2024}} = \frac{45}{2\sqrt{506}} = \frac{45}{2 \cdot 2\sqrt{126.5}} = \frac{45}{4\sqrt{253}}$
 $f'(91) = \frac{91}{\sqrt{8281-4}} = \frac{91}{\sqrt{8277}}$
 $f'(92) = \frac{92}{\sqrt{8464-4}} = \frac{92}{\sqrt{8460}} = \frac{23}{\sqrt{2115}} = \frac{23}{3\sqrt{235}}$
 $f'(93) = \frac{93}{\sqrt{8649-4}} = \frac{93}{\sqrt{8645}} = \frac{93}{3\sqrt{9605}} = \frac{93}{15\sqrt{1921}}$
 $f'(94) = \frac{94}{\sqrt{8836-4}} = \frac{94}{\sqrt{8832}} = \frac{47}{\sqrt{2208}} = \frac{47}{2\sqrt{552}} = \frac{47}{2 \cdot 2\sqrt{138}} = \frac{47}{4\sqrt{138}}$
 $f'(95) = \frac{95}{\sqrt{9025-4}} = \frac{95}{\sqrt{9021}}$
 $f'(96) = \frac{96}{\sqrt{9216-4}} = \frac{96}{\sqrt{9212}} = \frac{24}{\sqrt{2303}} = \frac{24}{\sqrt{11 \cdot 209.363...}} = \frac{24}{\sqrt{11 \cdot 209.363...}}$
 $f'(97) = \frac{97}{\sqrt{9409-4}} = \frac{97}{\sqrt{9405}} = \frac{97}{3\sqrt{1045}}$
 $f'(98) = \frac{98}{\sqrt{9604-4}} = \frac{98}{\sqrt{9600}} = \frac{49}{\sqrt{2400}} = \frac{49}{2\sqrt{600}} = \frac{49}{2 \cdot 2\sqrt{150}} = \frac{49}{4\sqrt{150}}$
 $f'(99) = \frac{99}{\sqrt{9801-4}} = \frac{99}{\sqrt{9797}}$
 $f'(100) = \frac{100}{\sqrt{10000-4}} = \frac{100}{\sqrt{9996}} = \frac{25}{\sqrt{2499}} = \frac{25}{3\sqrt{833}}$

15.19 $g(x) = (x+3)^3 + 10x$, $g'(x) = 3(x+3)^2 \cdot 1 + 10 = 3(x^2+6x+9) + 10 = 3x^2 + 18x + 27 + 10 = 3x^2 +$