pyMaxima-Sitzung (23. September 2010)

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(%i1) "Mathe Q1  => LS, S. 144/Nr. 5a"$

(%i2) f(x) := 0.5 * x^2;
                                                    2
(%o2)                                    f(x) := 0.5 x

(%i3) "Bestimme Tangente im Punkt P(3|4.5)"$

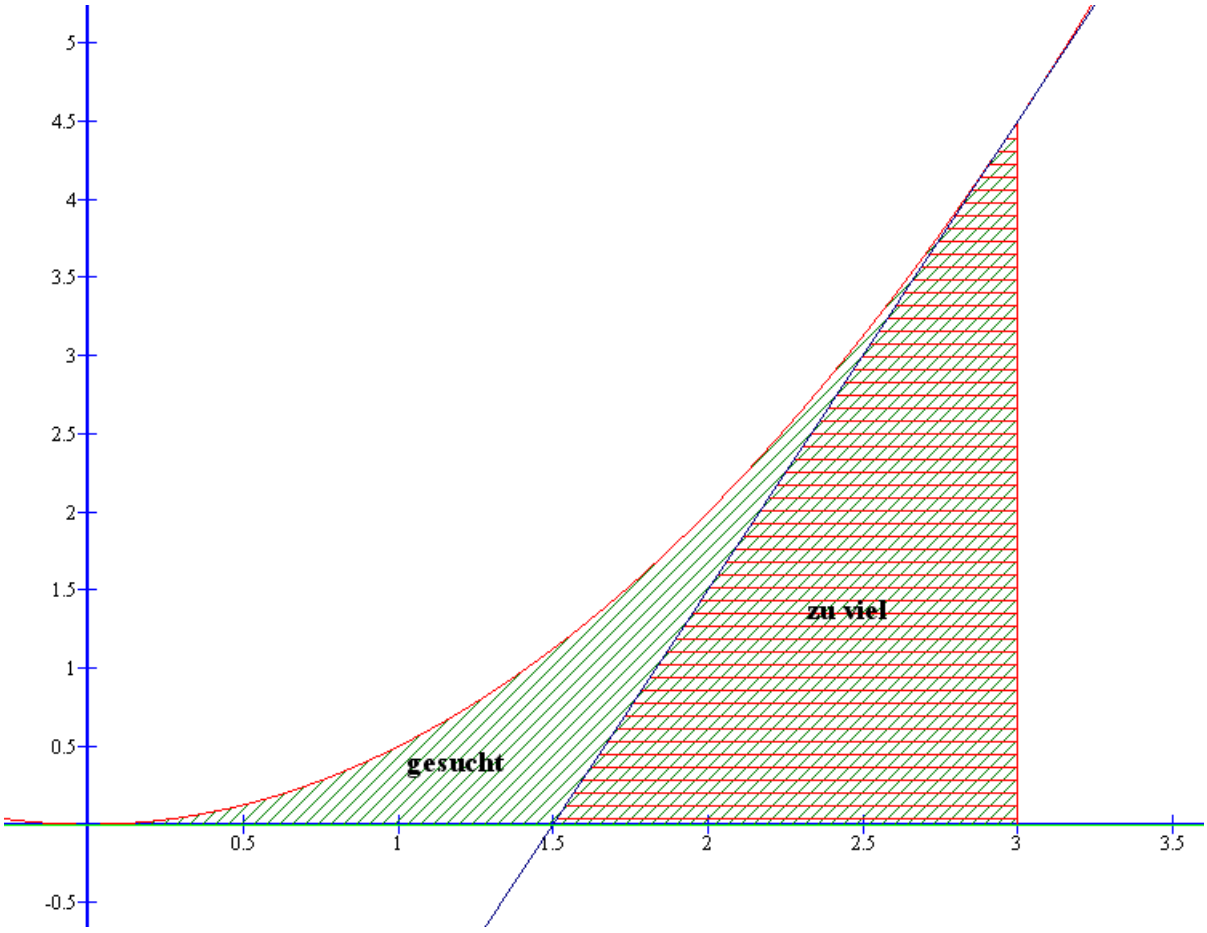
(%i4) diff(f(x),x);
(%o4)                                        1.0 x

(%i5) "=> f'(3) = 3 = m => Ansatz: y_t := 3 *x + b"$

(%i6) "P einsetzen: 4.5 = 3*3 + b => b = -4.5 => y_t := 3*x - 4.5"$

(%i7) y_t(x) := 3*x - 4.5;
(%o7)                                  y_t(x) := 3 x - 4.5

(%i8) "Zeichnung:"$
```

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(%i9) "Gesuchte Flaeche A = integrate( 0.5 * x^2,x,0,3) - rotes Dreieck"$

(%i10) "rotes Dreieck: A_D = 0.5 * 1.5 * 4.5"$

(%i11) integrate( 0.5 * x^2,x,0,3);
(%o11)                                        4.5
```

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(%i12) A_D : 0.5 * 1.5 * 4.5;
(%o12)                                3.375

(%i13) A : integrate( 0.5 * x^2,x,0,3) - A_D;
(%o13)                                1.125
(%i14) ratsimp(%);
                                        9
(%o14)                                  -
                                        8

(%i15) "Ergebnis: A = 1.125 = 9/8"
```