SKILL CHECK FOR MAPLE

Please use Maple to complete the following tasks.

(1) Which is bigger: $\sqrt{2}+\sqrt{3}$ or $\sqrt{2+3}$? Estimate the difference to four decimal places.

(2) Assign the value 4.15231 to the variable x, then use this to calculate $\frac{(4.15231)^2-\tan(4.15231)}{4.15231^3-1}$.

(3) Solve for x in the equation $e^{x^2} = 10$. (Did you remember to unassign the value for x?)

(4) Find the second derivative with respect to x of $\frac{\sin(a\cdot x)}{\cos(b\cdot x)}$ (a and b are constants).

(5) Find the area under the curve $y = 4 * \sin x + \cos(2x) - 1$ from $x = 0$ to $x = \pi$. Find both the exact answer and an estimate accurate to four decimal places.

(6) Graph the function $g(x) = 4 * \sin x + \cos(2x) - 1$ on the interval from $x = 0$ to $x = \pi$.

(7) Graph the curve determined by the equation

$$(x^2-1)^2 + (y^2-1)(y+1)^2 = 0.$$

(Don't forget to load the `plots` package). Be sure to have the correct zoom so that you can tell why it is called the bicuspid curve.

(8) Use the help system to figure out how to simplify the expression $\frac{x^3-\sin^2(x)-\cos^2(x)}{x-1}$.