Maple Treasure Hunt

This is not for handing in, just to give you some practice with Maple.

In many of these questions, the Maple help system will be very useful. Click **Help** on the menu bar, choose **Maple Help**. You can type a word in (near the top left, under "Search For:") and press Search to search for help topics starting with that word, or for any help page containing that word.

Use Maple to find the following:

(a). What is the first nonzero digit after the decimal point in $2^{1/2010}$?

(b). What is the 2010th digit after the decimal point in $\sqrt{2}$?

(c). What is the 2010'th prime number?

(d). Find integers a and b such that $(a + b\sqrt{2010})^2 = 73321 - 372\sqrt{2010}$

(e). What is the first digit of the 2010'th Bernoulli number?

(f). Find the limit of $\dfrac{x^3}{e^x - e^{\sin(x)}}$ as $x \to 0$. *Hint:* the exponential function in Maple is `exp`.