Midterm 2 − Review − Answers

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(1) $y' = -\frac{1}{2}$

(2) 96

(3) 9 feet

(4) $t = \frac{30\ln\left(\frac{1}{100}\right)}{\ln\left(\frac{1}{2}\right)} \approx 199$ years

(5) 8.156

(6) (a) 0

   (b) 1

(7) Suppose there are two roots a and b, then use Rolle's theorem as usual to get a contradiction! Note that if $-1 < x < 1$, then $x^4 < 1$

(8) Suppose there is such a function, and use the Mean Value Theorem on $[0, 2]$ to get a contradiction

(9) Increasing by $\frac{1}{12}$ cm/s

(10) Row until she reaches $x = \frac{9}{\sqrt{7}}$, and then run.

   Note: Here the constraint is $0 \leq x \leq 8$, so you have to use the closed interval method, and check the endpoints 0 and 8. For a more detailed answer, check out pages $329 - 330$ of your textbook.

(11) See the solutions to Quiz 9.