1. (a) $x = \ln(6) \left(= \dfrac{\log(6)}{\log(e)} \right)$

(b) $x = \dfrac{2 \log(7)}{5 \log(8) - \log(7)}$

(c) $x = K(3 - \log_2(A)) \left(= \dfrac{K(\log(8) - \log(A))}{\log(2)} \right)$

2. (a) 3 grams

(b) mass of the isotope in t years $= 12 \left(\dfrac{1}{2} \right)^{\frac{t}{3}}$

(c) 12 years

3. (a) (i) 5, (ii) 4.5, (iii) 4.1
(b) $f'(t) = 2t + 2$
(c) $f'(1) = 4$
(d) $t = .5$

4. (a) $f'(x) = 9x^2 + 4x$
(b) $f'(x) = -\dfrac{3}{5} x^{-\frac{8}{5}}$
(c) $f'(x) = 6e^{2x}$
(d) $f'(x) = \dfrac{1}{2\sqrt{x}} - \dfrac{1}{2x^{\frac{3}{2}}}$

5. $y = 7x - 3$

6. $e^{1.2} \approx 1.2e$

7. 6 degrees/hour