Week in Review # 3
Section 1.6, 1.7, and 1.8

1. (a) $4\ln(x) + 5\ln(z)$
   (b) $3x - 5\ln(x)$

2. (a) $x = \dfrac{\ln(J) - \ln(5)}{\ln(8)}$ or $x = \dfrac{\ln\left(\frac{J}{5}\right)}{\ln(8)}$
   (b) $x = \dfrac{\ln(8) - \ln(2)}{\ln(7) - \ln(3)} = \dfrac{\ln(2) - \ln(8)}{\ln(3) - \ln(7)}$

   $x = 1.636135798$

3. (a) I) $y = 35e^{0.22314355x}$
   II) rate of growth is 25%
   III) rate of growth is 22.314355%
   (b) I) $y = 27(0.88073367)^x$
   II) rate of decay is 11.926633%
   III) rate of decay is 12.7%

4. (a) half-life is 46.05629 years
   (b) half-life is 28.52457 years
   (c) half-life for the student is 34.657 years. This is a significant difference from the answers for part (a) and (b). Thus bad rounding can cause big problems.

5. formula: $y = 600e^{0.174153347x}$
   (a) 17.4153347%
   (b) $\frac{\ln(3)}{.174153347} = 6.3083$ years

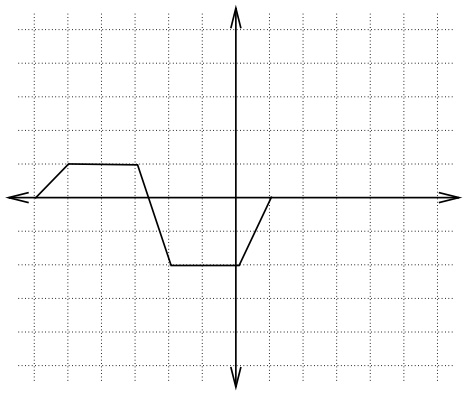
6. (a) \$9156.77
   (b) \$9059.19

7. (a) 27
   (b) 4
   (c) 131
   (d) $\sqrt{2x^2 + 8}$
   (e) $2x + 13$

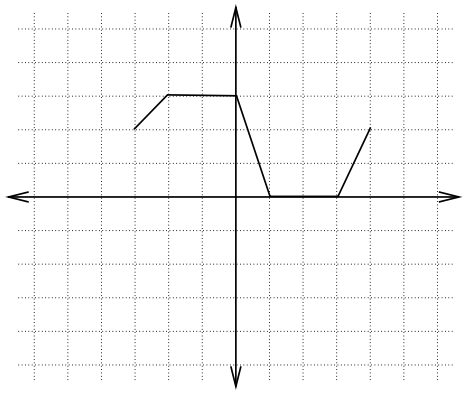
8. Answers will vary.

   $g(x) = 3x^2 + 1$
   $f(x) = 5\ln(x)$

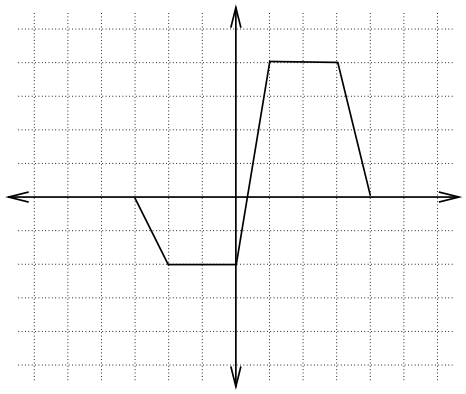
9. (a) f(x+3)



(b) $f(x) + 2$



(c) $-2f(x)$



(d) $2 - f(x)$