10.

2) Use $B = Pe^{rt}$

$P = 10,000$

$r = .08 \implies B = 10,000(e^{.08(5)}) = 14,918.25$

$t = 5$

6) Since interest is added only once per year, then we have $(1.055)^t$ with $t$ being the years. 

Since we began with 1000 dollars and left the money for 8 years we have $(1000)(1.055)^8 \approx 1552.72$

b) we can also write $P = Pe^{rt}$

$\implies P = 1000e^{(1.055)t} \approx 1552.71$

16) We want to know the rate of decay if $t=10$ and we have 96% of the initial quantity

$.96Q_0 = Q_0e^{kt}$

$.96 = e^{kt}$

$\ln(.96) = kt$

$k = \frac{\ln(.96)}{10} \approx -0.004$
Now use this to find the half-life

\[ \frac{1}{2} Q_0 = Q_0 e^{-0.004 t} \]

\[ \ln(0.5) = -0.004 t \]

\[ t = \frac{\ln(0.5)}{-0.004} \approx 173 \]

30) a. \( g(0) = 2 \) and \( f(2) = 3 \) so \( g(f(0)) = 3 \)

b. \( f(g(1)) = f(3) = 4 \)

c. \( f(g(2)) = f(5) = 11 \)

d. \( g(f(2)) = g(3) = 8 \)

e. \( g(f(3)) = g(4) = 12 \)

32) \( f(g(1)) = f(2) \approx 0.4 \)

34) \( f(f(1)) = f(-0.4) \approx -0.9 \)
2) \( y = 3x^{-2}, \ k=3, \ \rho =-2 \)

4) \( y = \frac{3}{8}x^{-1}, \ k=\frac{3}{8}, \ \rho =-1 \)

10) \( y = 5^3, \ x^3 = 125x^3, \ k=125 \)

14) We know \( E \) is proportional to \( v^3 \), so \( E = kv^3 \) for some \( k \).

16) For some constant \( k \), we have \( F = \frac{K}{d^2} \)

38) a) minimum degree is 3 because graph turns twice
   
   b) leading coefficient is negative because \( y \to -\infty \) as \( x \to \infty \)
   
   (i) a. min. deg. is 4 since the graph turns 3 times.
   
   b. lead coeff. is positive since \( y \to \infty \) as \( x \to \infty \)
   
   (ii) a. min deg. is 4 since graph turns 3 times
   
   b. negative, since \( y \to -\infty \) as \( x \to \infty \)
   
   (iii) a. min deg. is 5
   
   b. negative
   
   (iv) a. min deg is 5
   
   b. negative

   (v) a. min deg is 5
   
   b. positive