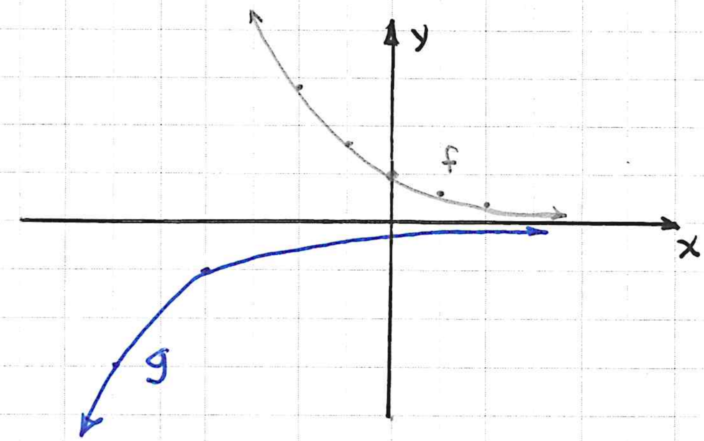
Math 27, HW #14 Selected Problems

Pg. 189, #25 $f(x) = \left(\frac{3}{5}\right)^x$, $g(x) = -\left(\frac{3}{5}\right)^{x+4}$

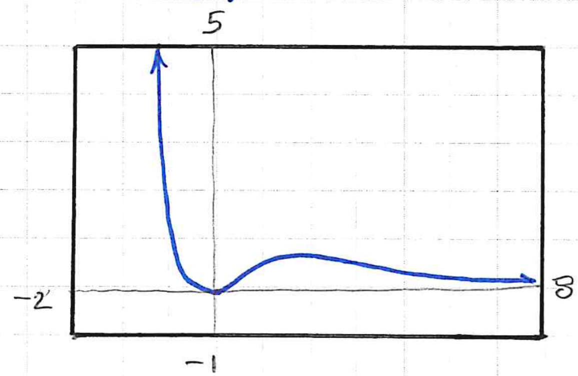


To transform f into g:

① HS 4 ← ② Rx

Pg. 190, #61 $f(x) = x^2 e^{-x}$

a)



c) RMin = 0 when $x = 0$

RMax = 0.541 when $x = 2$

b) Decreasing on: $(-\infty, 0) \cup (2, \infty)$

Increasing on: $(0, 2)$

Pg. 191, #67 $r = 4\% = .04$, $t = 20$ years

Finding the Balance for Compound Interest **In Exercises 65–68, complete the table to determine the balance A for \$2500 invested at rate r for t years and compounded n times per year.**

So, $A = 2500\left(1 + \frac{.04}{n}\right)^{n \cdot 20}$

The compound interest formula is: $A = P\left(1 + \frac{r}{n}\right)^{nt}$.

Continuous: $\boxed{A = Pe^{rt}}$

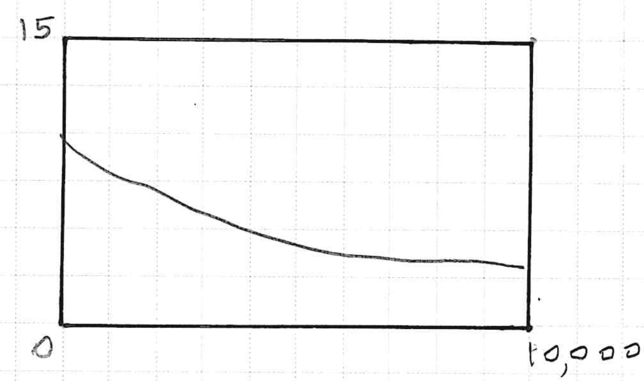
n	1	2	4	12	365	Cont.
A	\$ 5477.81	~~\$112,183.60~~ \$5520.10	\$5541.79			\$5563.85

79. Radioactive Decay Let Q represent a mass, in grams, of carbon 14 (^{14}C), whose half-life is 5700 years. The quantity present after t years is given by $Q = 10\left(\frac{1}{2}\right)^{t/5700}$.

(a) Determine the initial quantity (when $t = 0$).

(b) Determine the quantity present after 2000 years.

(c) Sketch the graph of the function over the interval $t = 0$ to $t = 10{,}000$.



$[0, 10000]_{1000} \times [0, 15]$

a) $Q(0) = 10\left(\frac{1}{2}\right)^0 = 10$ g

b) $Q(2000) = 10\left(\frac{1}{2}\right)^{2000/5700} = 7.841$ g