8.5 Solving Exponential Equations

"I can solve and check any equation that contains exponential expressions.
I can apply what I have learned in unfamiliar settings."

The formula to calculate the mass, $M(t)$, remaining from an original sample of a substance with mass P_0, can be determined using the formula:

$$M(t) = P_0 \left(\frac{1}{2}\right)^{\frac{t}{h}} \text{, where } t \text{ is time, and } h \text{ is the half-life.}$$

Recall:

the half-life of a substance is the amount of time required to reduce its mass by one-half.

Ex. 1: Jocelyn works in a lab that uses radioactive substances.
The lab received a shipment of 200 g of radioactive iodine and after 7 days, 55.8163 g of the iodine was still remaining.
Calculate the half-life, to the nearest tenth of a day, of radioactive iodine.

Ex. 2: Solve $5^{x+1} = 7^{x-2}$, to three decimal places.

Ex. 3: Solve $25(2^x) = 150$, to three decimal places.

Ex. 4: Solve algebraically: $9^{x+1} = \dfrac{1}{27}$

Ex. 5: Solve algebraically: $3^{x+2} - 3^{x+1} = 162$

Exponentially fun seatwork: pp.485-486 #1ce, 2ce, 3ce, 4ad, 5cde, 7, 8bf, 10, 11, 12