7.7 Homework Name: Key

(1-3) Write an exponential function $y = ab^x$ whose graph passes through the given points.

1) $(1,3),(2,12)$

$y = \frac{3}{4} \cdot 4^x$

2) $(3,27),(5,243)$

$y = 3^x$

3) $(2,6.4),(5,409.6)$

$y = 0.4 \cdot 4^x$

4) A doctor measures an astronaut's pulse rate y (in beats per minute) at various times x (in minutes) after the astronaut has finished exercising. The astronaut's resting pulse rate is 70 beats per minute. Write an exponential model for the data, given the following information:

At 2 minutes, the pulse rate was 132 bpm
At 10 minutes, the pulse rate was 78 bpm

$132 = a \cdot b^2$

$a = \frac{132}{b^2}$

$78 = a \cdot b^{10}$

$78 = \left(\frac{132}{b^2}\right) b^{10}$

$78 = 132 \cdot b^8$

$\frac{13}{22} = b^8$

$b = \pm \sqrt[8]{\frac{13}{22}}$

$132 = a \cdot \left(\sqrt[8]{\frac{13}{22}}\right)^2$

$a = 150.56$

$b = 0.94$

$y = 150.56(0.94)^x$