Pre-Calc 2.4-2.6 Quiz Review **Name** _____

1) Find the quadratic model to represent the data. Use Calculator.

L_1 x	25	50	75	100	125	150	175
L_2 y	150	178	216	265	323	392	470.4

$y = 0.008x^2 + 0.518x + 131.88$

2) Write an exponential function that fits the points: (0, 4) and (3, 32). Show work.

x	y
0	4
3	32

$b^{3-0} = \frac{32}{4}$

$\sqrt[3]{b^3} = \sqrt[3]{8}$

$b = 2$

$y = a(2)^x$

$4 = a(2)^0$

$4 = a$

$\boxed{y = 4(2)^x}$

3) State whether the function described by the equation models exponential growth, exponential decay or neither.

a) $h(x) = (3.2)(x)^5$ b) $g(x) = (7.5)\left(\frac{1}{4}\right)^x$ c) $f(x) = (0.5)(2.8)^x$

- Neither
- "x" is not the exponent

- decay
- $0 < b < 1$

- growth
- $b > 1$

4) A certain substance has a half-life of 30 years. If a sample of 100 grams is being observed, how much will remain in 40 years? When will only 2 grams remain?

$(0.5)^{1/30} = (b^{30})^{1/30}$

$b = 0.977$

$y = 100(0.977)^{40}$

$\boxed{y = 39.43 \text{ g after 40 yrs}}$

$\frac{2}{100} = \frac{100(.977)^x}{100}$

$\frac{2}{100} = .977^x$

$\log \frac{2}{100} = \log .977^x$

$\frac{\log \frac{2}{100}}{\log .977} = \frac{x \log .977}{\log .977}$

$\boxed{x = 168 \text{ yrs}}$