Lesson 4.6 Extra Practice

1. Describe each of the following transformations of the base function

$$f(x) = \left(\frac{1}{2}\right)^x.$$

a) $g(x) = \left(\frac{1}{2}\right)^x + 2$

b) $g(x) = 3\left(\frac{1}{2}\right)^x$

c) $g(x) = \left(\frac{1}{2}\right)^{x+4}$

d) $g(x) = \left(\frac{1}{2}\right)^{\frac{x}{5}}$

2. Describe each of the following transformations of the base function $h(x) = 5^x$.

a) $k(x) = 5^{x+2} - 3$

b) $h(x) = 2(5)^{\frac{x}{4}}$

c) $h(x) = 5^{4x-2} + 4$

d) $h(x) = \frac{1}{3}(5)^{5x}$

3. For each transformation, state the base function and then describe the transformations in the order they could be applied.

a) $f(x) = 3^{x-2} + 2$

b) $g(x) = 2\left(\frac{1}{4}\right)^{\frac{x}{3}}$

c) $h(x) = 5(1.5)^x - 4$

d) $k(x) = \left(\frac{1}{2}\right)^{4x-8}$

4. For each of the following equations, state the y-intercept, equation of the asymptote, and the domain and range.

a) $f(x) = 4^{x+2}$

b) $g(x) = 3\left(\frac{1}{5}\right)^{3x}$

c) $h(x) = \frac{1}{2}(3)^x + 2$

d) $k(x) = 5^{3x+6}$

5. For each of the following equations, 1) state the base function; 2) describe the transformations that must be applied to the base function; 3) state the y-intercept; 4) state the equation of the asymptote; 5) give the domain and range.

a) $f(x) = 2^{2x-4} + 3$

b) $g(x) = \left(\frac{1}{3}\right)^{3x} - 2$

c) $h(x) = 5\left(\frac{1}{2}\right)^{\frac{x}{2}} + 6$

6. Match the equation of the following functions to the appropriate graph.

a) $f(x) = 4^{x-2} - 3$

b) $g(x) = \left(\frac{2}{3}\right)^{2x+4}$

c) $h(x) = 5(2)^x + 1$

i)

ii)

iii)