

Date: _____

Name: _____

PRACTICE Exponential Transformations and Sketches

For each of the following:

- state the parent function
- state the transformations BEFORE you simplify the equation
- predict if this is growth or decay
- identify the asymptote and domain & range
- sketch using the simplified form.

1. $f(x) = (0.8)^{3x} - 3$

2. $g(x) = 5(3.5)^{\frac{x-8}{2}} - 10$

3. $h(x) = -0.5(2)^{4-1.5x} + 8$

4. $p(x) = -4(0.9)^{10-2x}$

5. $q(x) = -400(3.1)^{x-5} + 2$

6. $r(x) = 7(0.55)^{\frac{x}{4}} - 5$

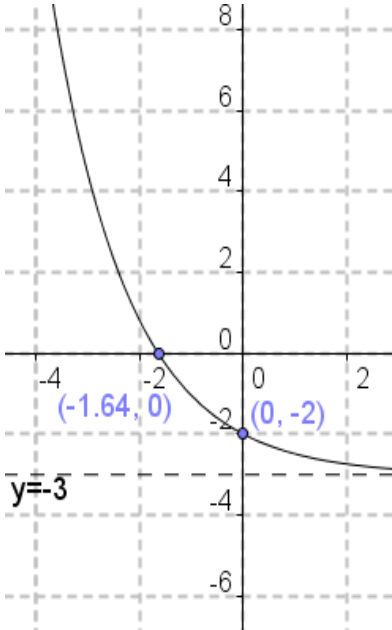
ANSWERS

All domains are real numbers

1. $f(x) = (0.8)^{3x} - 3$

$Y=0.8^x$, horiz compress, shift down 3
Range $y > -3$

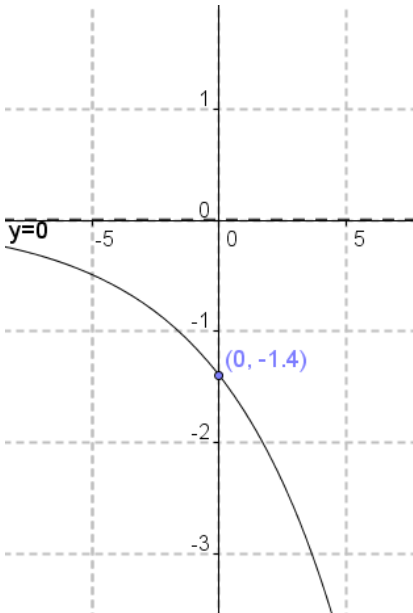
simplified $y = (0.512)^x - 3$



4. $p(x) = -4(0.9)^{10-2x}$

$Y=0.9^x$, reflect in x-axis, vert stretch, reflect in y-axis, horiz compress, shift right 5
Range $y < 0$

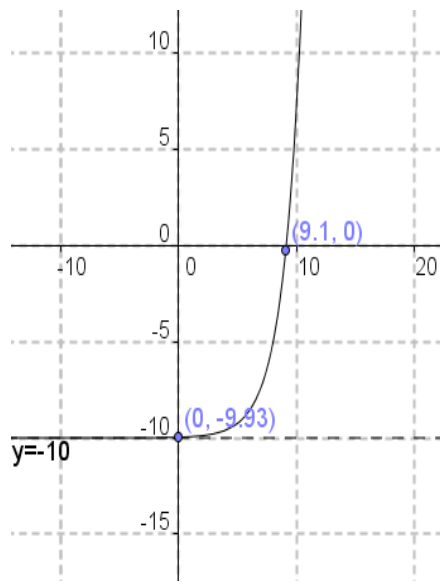
simplified $y = -1.4(1.23)^x$



2. $g(x) = 5(3.5)^{\frac{x-8}{2}} - 10$

$Y=3.5^x$, vert. stretch, horiz stretch, shift right 8 and down 10
Range $y > -10$

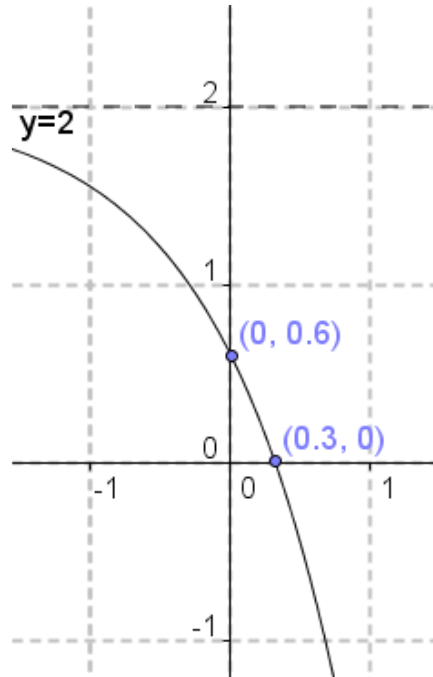
simplified $y = 0.033(1.87)^x - 10$



5. $q(x) = -400(3.1)^{x-5} + 2$

$Y=3.1^x$, reflect in x-axis, vert. stretch, shift right 5, up 2
Range $y < 2$

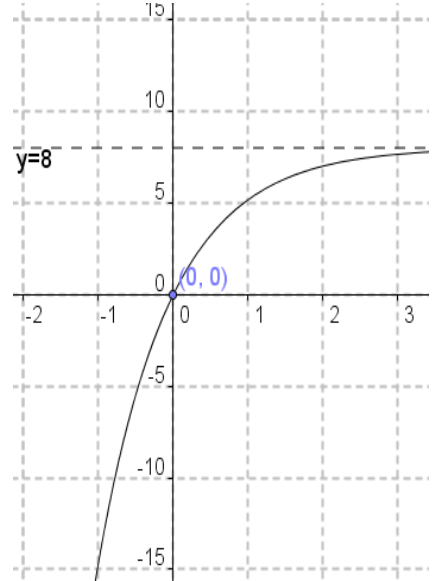
simplified $y = -1.4(3.1)^x + 2$



3. $h(x) = -0.5(2)^{4-1.5x} + 8$

$Y=2^x$, reflect in x-axis, vert. compress, reflect in y-axis, horiz compress, shift right by 8/3, up by 8
Range $y < 8$

simplified $y = -8(0.35)^x + 8$



6. $r(x) = 7(0.55)^{\frac{x}{4}} - 5$

$Y=0.55^x$, vert stretch, horiz stretch, shift down 5
Range $y > -5$

simplified $y = 7(0.85)^x - 5$

