

Transformations of Exponential Functions

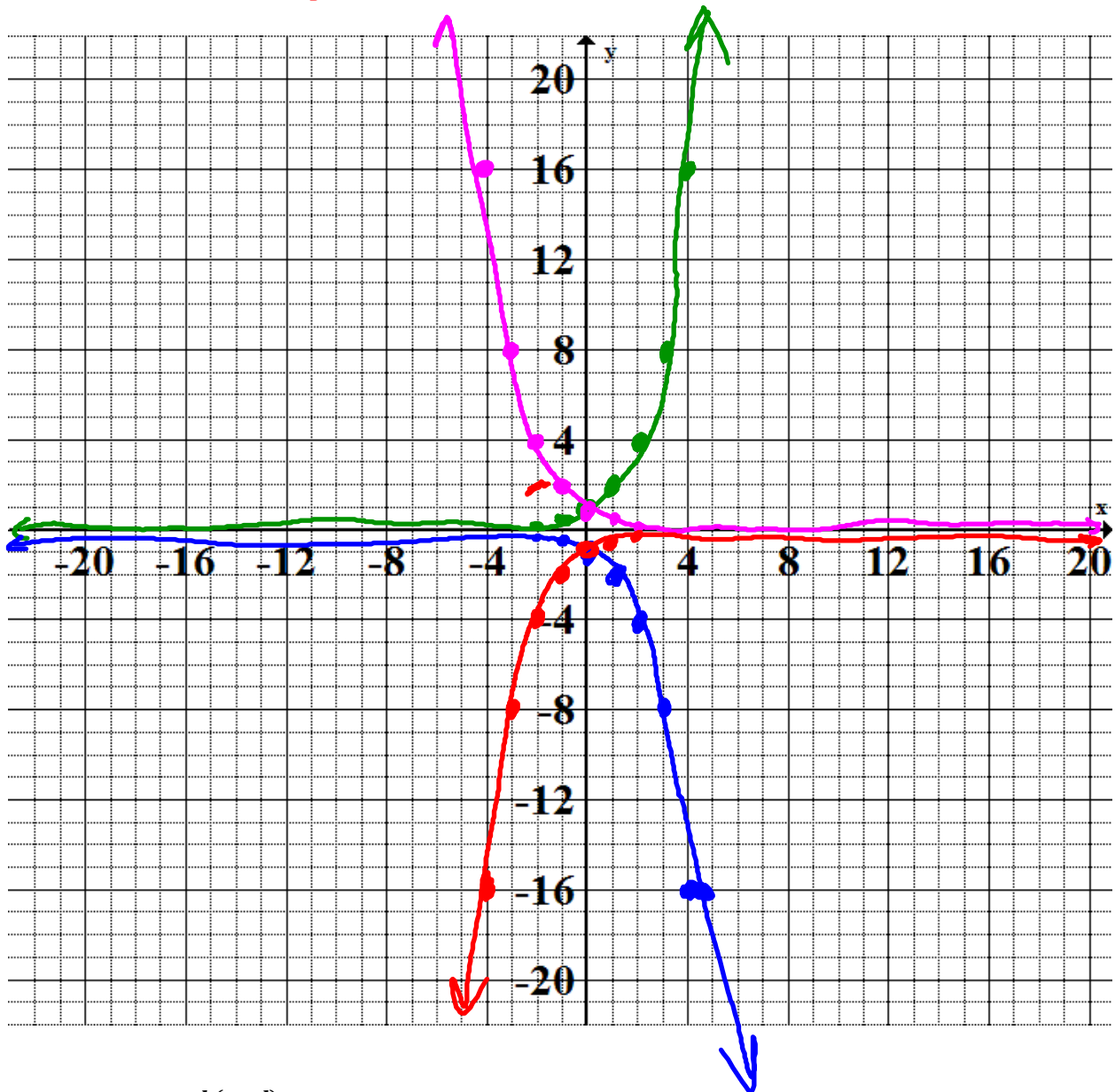
$$f(x) = b^x$$

$$f(x) = 0.5^x$$

$$f(x) = -0.5^x$$

$$f(x) = 2^x$$

$$f(x) = -2^x$$



$$g(x) = a \times b^{k(x-d)} + c$$

<p>a</p> <p>see slides</p>	<p>c</p> <p>see slides</p>
<p>k</p> <p>see slides</p>	<p>d</p> <p>see slides</p>

$$g(x) = a \times b^{k(x-d)} + c$$

$$f(x) = 2^x \quad a=1 \quad d=0 \\ k=1 \quad c=0$$

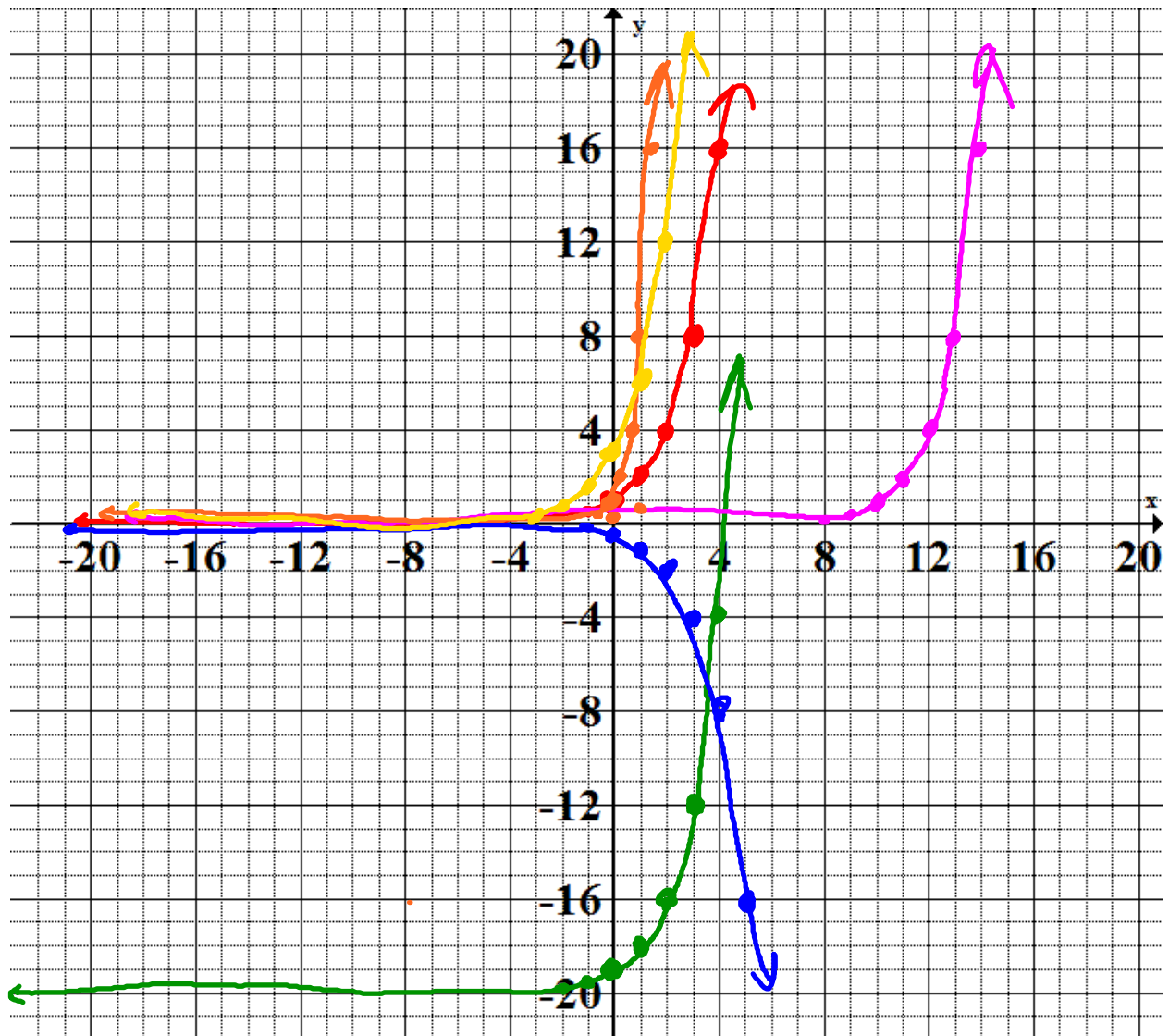
$$g(x) = 2^x - 20 \rightarrow \text{shift } 2^x \text{ down } 20 \\ \rightarrow \text{asymptote is } y = -20 \text{ (value of } c)$$

$$g(x) = -0.5(2^x) \rightarrow a = -0.5 \\ \rightarrow 2^x \text{ has been vertically compressed by } \frac{1}{2} \text{ and reflected in the } x\text{-axis}$$

$$g(x) = 2^{x-10} \rightarrow d = 10 \\ \rightarrow \text{the curve } (2^x) \text{ has been shifted } 10 \text{ units to the right}$$

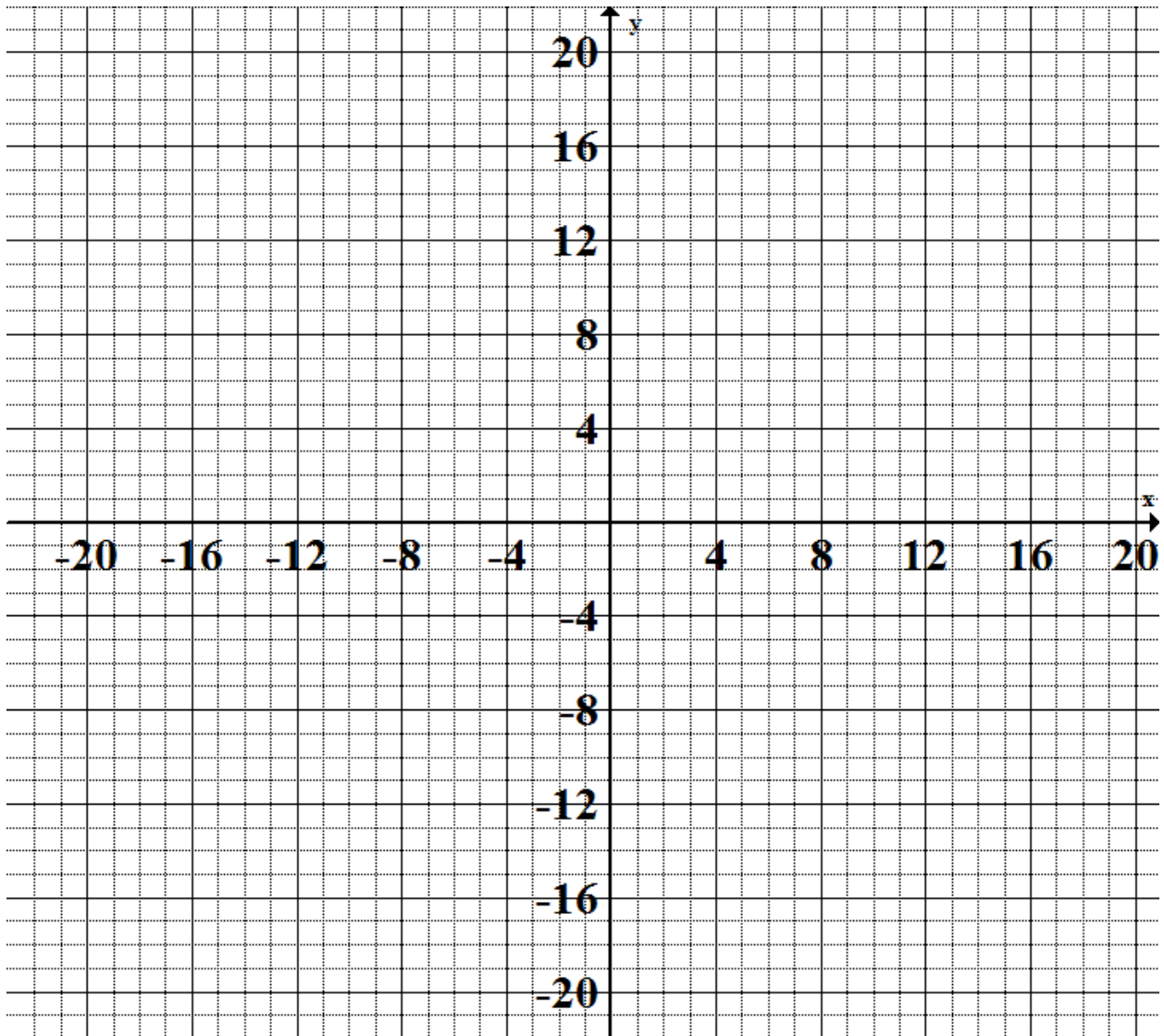
$$g(x) = 2^{3x} \rightarrow k = 3 \\ \rightarrow \text{horizontally compressed by a factor of } 3$$

$$g(x) = 3(2^x) \rightarrow a = 3 \\ \rightarrow \text{vertically stretched by a factor of } 3$$



$$g(x) = -0.25(2^{-2(x+12)}) + 16$$

Steps to Graphing:



$$g(x) = -\frac{1}{10} \times 5^{3x-9} + 10$$

Steps to Graphing:

