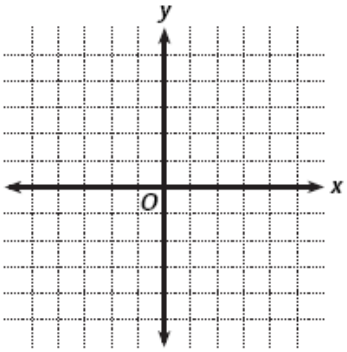
For questions 11 - 12, graph the following functions without using a graphing calculator.

11. $y = -3(4)^{x+1} - 2$



11. H.A.:

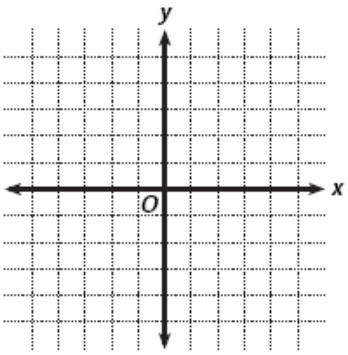
End Behavior:

Starting Pt:

Translation:

New Pt:

12. $y = \log_5(x-2) + 3$



12. V.A.:

End Behavior:

Starting Pt.:

Translation:

New Pt:

13. Describe the end behavior of the function $f(x) = (3)^{x+1} - 2$. 13._____

a. as $x \to -\infty$, $f(x) \to +\infty$ and as $x \to +\infty$, $f(x) \to -2$
b. as $x \to -\infty$, $f(x) \to -2$ and as $x \to +\infty$, $f(x) \to +\infty$
c. as $x \to -\infty$, $f(x) \to -\infty$ and as $x \to +\infty$, $f(x) \to +\infty$
d. as $x \to -\infty$, $f(x) \to -1$ and as $x \to +\infty$, $f(x) \to +\infty$

14. Describe the end behavior of the function $f(x) = \log_7(x+5) - 4$. 14._____

a. as $x \to -5$, $f(x) \to -\infty$ and as $x \to +\infty$, $f(x) \to +\infty$
b. as $x \to -5$, $f(x) \to +\infty$ and as $x \to +\infty$, $f(x) \to +\infty$
c. as $x \to -\infty$, $f(x) \to -\infty$ and as $x \to +\infty$, $f(x) \to +\infty$
d. as $x \to -4$, $f(x) \to -\infty$ and as $x \to +\infty$, $f(x) \to +\infty$

15. Solve: $1.25^{x-7} = \left(\frac{125}{64}\right)^{2x+1}$ 15._____

16. Simplify: $\log_3 27 - \ln\left(e^4\right) - \log\left(10^9\right) + \log_8 512$ 16._____

17. Which of the following expressions is equivalent to $\ln\left(\frac{3 \cdot \sqrt[5]{x}}{y^2 z}\right)$?

A. $\ln(3) + 5\ln(x) - \frac{1}{2}\ln(y) - \ln(z)$

B. $\ln(3) + 5\ln(x) - 2\ln(y) + \ln(z)$

C. $\ln(3) + \frac{1}{5}\ln(x) - \frac{1}{2}\ln(y) + \ln(z)$

D. $\ln(3) + \frac{1}{5}\ln(x) - 2\ln(y) - \ln(z)$