

review

September-17-13
7:20 PM

used 2012

1. Simplify each expression

a) $\frac{2x^4 y^{-4} z^{-3}}{3x^2 y^{-3} z^4}$

b) $\frac{\sqrt[10]{1024x^{20}}}{\sqrt[9]{512x^{27}}}$

c) $\left(\frac{(6x^3)^2(6y^3)}{(9xy)^6}\right)^{-\frac{1}{3}}$

2. Solve each equation, if possible.

a) $26 = -1 + (27x)^{\frac{3}{4}}$

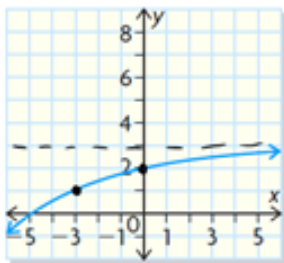
b) $3 \cdot 3^{-2x+1} \cdot 3^{-2x-3} = 81^{-x}$

c) $9^{x-1} + 3 = 81$

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

- a) Simplify the equation into the form $y = ab^x + c$
- b) State the parent function of the answer in a., and the transformations
- c) Sketch and label asymptote and y-int

4. Find the equation for the graph



5) A certain type of bacteria currently cover 12% of the surface of a pond, and the bacteria grow at a rate of 8% every 3 weeks. What percent of the pond will be covered with bacteria in 10 weeks?

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6) The population of a city has seen a recent rapid increase. Three years ago, the city had 200 residents, one year ago it had 5000 residents, and this year, there are 25 000 residents. When will the city's population exceed one million residents for the first time?

7) An ant colony population is cut in four every month. Currently, there are 16 000 in the nest. What is the monthly decay rate of the population?

8.) Solve the following

a) $\log(x+1) - 2 = \log(x^2 - 4) - \log(x+2)$

b) $\log_2(x^2 + 1) - \log_4 x^2 = 1$

c) $3(3^x) + \frac{81}{3^{x-1}} = 90$

d) $7(2^{x-3}) - 11 = 20$

9.

$$f(x) = \log_2(x-1) + 3$$

- a) Find the inverse function
b) Sketch both $f(x)$ and $f^{-1}(x)$

10.) Find the hydrogen ion concentration, $[H^+]$, of a solution with pH 9.3

11.) The intensity of a sound wave is interpreted by our ears as its loudness. The weakest sound wave that a human ear can hear has a value of 1×10^{-12} watts/m² and is called the threshold of human hearing, I_0 . What is the intensity in watt/m² of a sound wave that has a sound level reading of 125 dB, the loudness of an average fire alarm

12.) A recent earthquake in San Francisco measured 7.1 on the Richter scale. How many times more intense was the San Francisco earthquake earlier in the century if it measured 8.3 on Richter scale.