5.3 day 2 notes

Tuesday, February 17, 2015
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Algebra 2 Trig Honors Name:

5.3 day 2 Graphing and evaluating logarithms

W E G O !

\# A T   X P O N E N T   O E S   N

$\log_5 625 = 4$

$\log_2 128 = 7$

$\log_{\frac{1}{3}} \frac{1}{9} = 2$

Evaluate the following logarithms:

1. $\log_4 16 =$ 2

2. $\log_6 216 =$ 3

3. $\log_2 4 =$ 2

4. $\log_3 27 =$ 3

5. $\log_{10} 1000 =$ 3

6. $\log_2 \sqrt{32} =$

$\log_2 (2^5)^{1/2}$ $\frac{5}{2}$

7. $\log_5 125 =$ 3

8. $\log_4 \frac{1}{4} =$ -1

9. $\log_6 1 =$ 0

10. $\log_2 \frac{1}{4} =$ -2

11. $\log_{10} \frac{1}{100} =$ -2

12. $\log_2 \frac{1}{16} =$ -4

13. $\log_2 \frac{1}{32} =$ -5

14. $\log_{27} \frac{1}{81} =$ $x = -\frac{4}{3}$

$27^x = \frac{1}{81}$

$3^{3x} = 3^{-4}$

$3x = -4$

15. $\log_4 \frac{1}{8} =$ $-3/2$

$4^x = \frac{1}{8}$

$2^{2x} = 2^{-3}$

$2x = -3$

16. $\log_{16} \frac{1}{32} =$ $-\frac{5}{4}$

$16^x = \frac{1}{32}$

$2^{4x} = 2^{-5}$

$4x = -5$

17. $\log_{100} .0001 =$ -2

$100^x = \frac{1}{10000}$

$10^{2x} = 10^{-4}$

18. Solve for x: $\log_x \frac{1}{125} = \frac{-3}{2}$

$\left(x^{-3/2}\right)^{-2/3} = \left(\frac{1}{125}\right)^{-2/3}$

$x^1 = 25$

19. Solve for x: $\log_{16} x = \frac{-3}{4}$

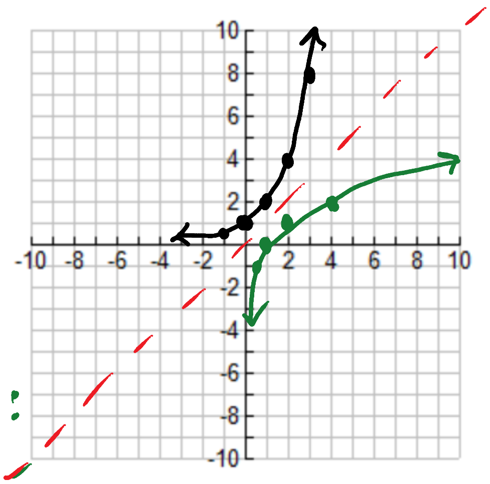
Argument

$16^{-3/4} = x$

$x = \frac{1}{8}$

20. Graph $f(x)=2^x$ and $f^{-1}(x)=\log_2 x$ and state the domain and range of each.

point always on a parent log: (1,0)



Domain of f(x): $(-\infty,\infty)$

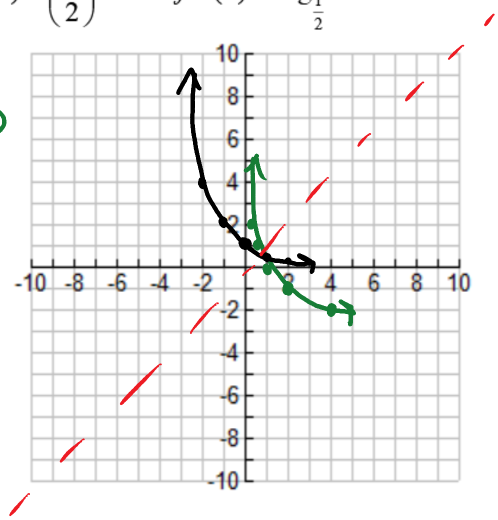
Range of f(x): $(0,\infty)$

Domain of $f^{-1}(x)$: $(0,\infty)$

Range of $f^{-1}(x)$: $(-\infty,\infty)$

21. Graph $f(x)=\left(\frac{1}{2}\right)^x$ and $f^{-1}(x)=\log_{\frac{1}{2}} x$ and state the domain and range of each.

$(0,1)\to(1,0)$
$(-1,2)\to(2,-1)$



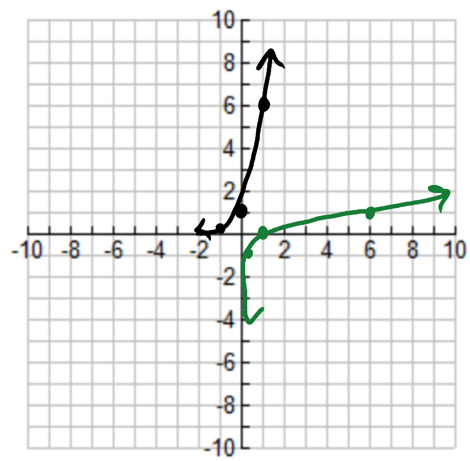
Domain of f(x): $(-\infty,\infty)$

Range of f(x): $(0,\infty)$

Domain of $f^{-1}(x)$: $(0,\infty)$

Range of $f^{-1}(x)$: $(-\infty,\infty)$

22. Graph $f(x)=6^x$ and $f^{-1}(x)=$ $\log_6 x$ and state the domain and range of each.



Domain of f(x): $(-\infty,\infty)$

Range of f(x): $(0,\infty)$

Domain of $f^{-1}(x)$: $(0,\infty)$

Range of $f^{-1}(x)$: $(-\infty,\infty)$