UNIT 3 - LESSON 5

READY SET GO

Name Period Date

READY

Topic: Ordering numbers

Order the numbers from least to greatest.

1. $100^3 = 1{,}000{,}000$ $\sqrt{100} = 10$ $\log_2 100$ 100 $2^{10} = 1024$

   Answer: $\log_2 100, \sqrt{100}, 100, 2^{10}, 100^3$

2. $2^{-1} = \frac{1}{2}$ $-\sqrt{100} = -10$ $\log_2\left(\frac{1}{8}\right) = -3$ 0 $(-2)^1 = -2$

   Answer: $-\sqrt{100}, \log_2\left(\frac{1}{8}\right), (-2), 0, 2^{-1}$

3. $2^0 = 1$ $\sqrt{25} = 5$ $\log_2 8 = 3$ $2(x^0), x \neq 0 = 2$ $(2)^{-\frac{1}{2}}$ $\frac{1}{\sqrt{2}}$

   Answer: $(2)^{-\frac{1}{2}}, 2^0, 2(x^0), \log_2 8, \sqrt{25}$

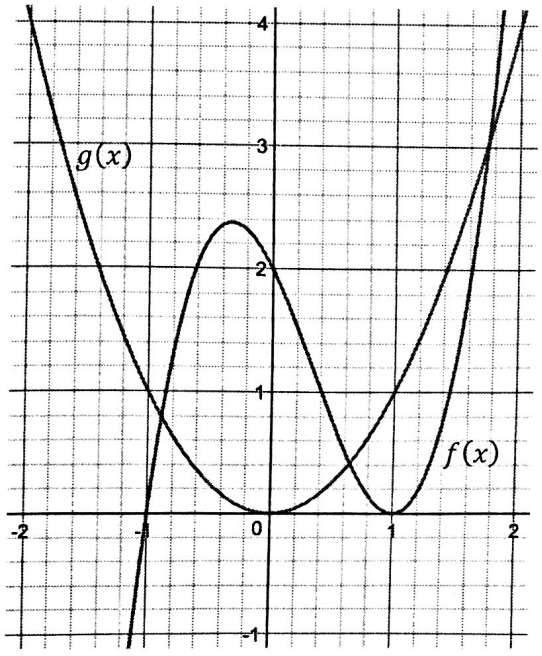
4. $\log_3 3^3 = 3$ $\log_5 5^{-2} = -2$ $\log_6 6^0 = 0$ $\log_4 4^{-1} = -1$ $\log_2 2^3 = 3$

   Answer: $\log_5 5^{-2}, \log_4 4^{-1}, \log_6 6^0$, Tie $\log_3 3^3 = \log_2 2^3$

Refer to the given graph to answer the questions.

Insert $>, <, or =$ in each statement to make it true.

5. $f(0)$ $>$ $g(0)$
6. $f(2)$ $>$ $g(2)$
7. $f(-1)$ $<$ $g(-1)$
8. $f(1)$ $<$ $g(-1)$
9. $f(5)$ $>$ $g(5)$
10. $f(-2)$ $<$ $g(-2)$



SET
Topic: Finding the roots and factors of a polynomial

Use the given root to find the remaining roots. Then write the function in factored form.

Function	Roots	Factored form
11. $f(x) = x^3 - 13x^2 + 52x - 60$ $x^2 - 8x + 12$ ← Factor $x-5 \overline{)x^3 - 13x^2 + 52x - 60}$ $+(x^3 - 5x^2)$ $-8x^2 + 52x - 60$ $+(+8x^2 + 40x)$ $12x - 60$ $+(-12x + 60)$	$x = 5$ $x = 6$ $x = 2$	$(x-5)(x-6)(x-2) = f(x)$
12. $g(x) = x^3 + 6x^2 - 11x - 66$ $x^2 - 11$ $x+6 \overline{)x^3 + 6x^2 - 11x - 66}$ $+(-x^3 - 6x^2)$ $-11x - 66$ $+(+11x + 66)$	$x = -6$ $x = \pm\sqrt{11}$	$(x+6)(x+\sqrt{11})(x-\sqrt{11}) = g(x)$ or $(x+6)(x^2-11) = g(x)$
13. $p(x) = x^3 + 17x^2 + 92x + 150$ $x^2 + 14x + 50$ $x+3 \overline{)x^3 + 17x^2 + 92x + 150}$ $+(-x^3 - 3x^2)$ $14x^2 + 92x + 150$ $+(-14x^2 - 42x)$ $50x + 150$ $+(-50x - 150)$	$x = -3$ $x = -7 \pm i$	$(x+3)(x^2+14x+50) = p(x)$ $x = \frac{-14 \pm \sqrt{196-200}}{2} = \frac{-14 \pm \sqrt{-4}}{2} = \frac{-14 \pm 2i}{2} = -7 \pm i$
H * Then 14. $q(x) = x^4 - 6x^3 + 3x^2 + 12x - 10$ $x^2 - 6x + 5$ Factor $x^2 - 2 \overline{)x^4 - 6x^3 + 3x^2 + 12x - 10}$ $+(-x^4 + 2x^2)$ $-6x^3 + 5x^2 + 12x - 10$ $+(+6x^3 + 12x)$ $5x^2 - 10$ $+(-5x^2 + 10)$	$x = \sqrt{2}$ $x = -\sqrt{2}$ $x = 5$ $x = 1$	Let: $(x-\sqrt{2})(x+\sqrt{2})(x-5)(x-1) = g(x)$ would get using quad. formula

GO
Topic: Finding the inverse function

Find the inverse of each function below

15. $f(x) = 3x - 1$ $\downarrow \cdot 3 \uparrow \div 3$ $-1 \quad +1$

$f^{-1}(x) = \frac{x+1}{3}$

16. $f(x) = -\frac{1}{x} - 1$ $\downarrow \wedge -1 \cdot -1 -1$ $\uparrow \wedge -1 \div -1 +1$?

$f^{-1}(x) = \frac{1}{\frac{x+1}{-1}} = \frac{-1}{x+1}$

17. $f(x) = -\frac{1}{x} - 1$ ↗

18. $f(x) = 2x^2 - 1; x \geq 0$ $\downarrow \wedge 2 \cdot 2 -1$ $\uparrow \sqrt{\ } \div 2 +1$

$f^{-1}(x) = \sqrt{\frac{x+1}{2}}$ (Restriction not needed for domain or range)

19. $f(x) = \frac{4}{5}x - 4$ $\downarrow \cdot \frac{4}{5} -4$ $\uparrow \cdot \frac{5}{4}(\ ) +4$

$f^{-1}(x) = \frac{5}{4}(x+4)$

20. $f(x) = x^3 + 3$ $\downarrow \wedge 3 +3$ $\uparrow \sqrt[3]{\ } -3$

$f^{-1}(x) = \sqrt[3]{x-3}$