5 Practice Test WITH CalcChat®

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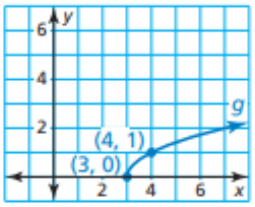
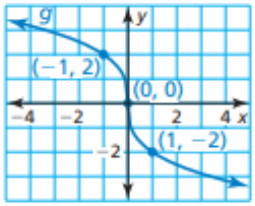
1. Solve the inequality $5\sqrt{x-3}-2 \le 13$ and the equation $5\sqrt{x-3}-2=13$. Describe the similarities and differences in solving radical equations and radical inequalities.

Describe the transformation of f represented by g. Then write a rule for g.

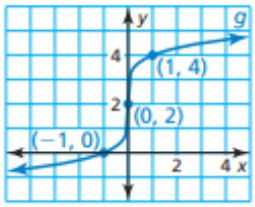
2. $f(x)=\sqrt{x}$



3. $f(x)=\sqrt[3]{x}$



4. $f(x)=\sqrt[5]{x}$



Simplify the expression. Explain your reasoning.

5. $64^{2/3}$

6. $(-27)^{5/3}$

7. $\sqrt[4]{48xy^{11}z^3}$

8. $\dfrac{\sqrt[3]{256}}{\sqrt[3]{32}}$

Let $f(x)=\frac{1}{4}x+6$, $g(x)=3x^{-1}$, and $h(x)=4x+12$. Perform the indicated composition and state the domain.

9. $f(h(x))$

10. $h(g(x))$

11. $g(f(x))$

12. $f(f(x))$

13. The graph of quadratic function f has focus $(-2, -7)$ and directrix $y=-1$. Find the focus and the directrix of the graph of the inverse of f.

14. The basal metabolic rate of an animal is a measure of the amount of calories burned at rest for basic functioning. Kleiber's law states that an animal's basal metabolic rate R (in kilocalories per day) can be modeled by $R=73.3w^{3/4}$, where w is the mass (in kilograms) of the animal. Find the basal metabolic rates of each animal in the table.

Animal	Mass (kilograms)
rabbit	2.5
sheep	50
human	70
lion	210

15. Let $f(x)=6x^{3/5}$ and $g(x)=-x^{3/5}$. Find $(f+g)(x)$ and $(f-g)(x)$ and state the domain of each. Then evaluate $(f+g)(32)$ and $(f-g)(32)$.

16. Let $f(x)=\frac{1}{2}x^{3/4}$ and $g(x)=8x$. Find $(fg)(x)$ and $\left(\frac{f}{g}\right)(x)$ and state the domain of each. Then evaluate $(fg)(16)$ and $\left(\frac{f}{g}\right)(16)$.

17. The fork length r (in centimeters) of a requiem shark can be approximated by $r=0.83t+1.13$, where t is the total length (in centimeters) of the shark. Find the inverse of the function. Use the inverse to approximate the total length of a requiem shark whose fork length is 250 centimeters.