Algebra 2 Trig H Name _____
Chapter 5 Review

In 1-6, simplify and leave no negative exponents.

1. $\dfrac{-27x^3(-x^7)}{16x^4}$

$+\dfrac{27x^3 \cdot x^7}{16x^4}$

$= \dfrac{27x^6}{16}$

2. $\dfrac{1}{\sqrt{3}+2} \cdot \dfrac{\sqrt{3}-2}{\sqrt{3}-2}$

$\dfrac{\sqrt{3}-2}{3-4}$

$= \dfrac{\sqrt{3}-2}{-1} = 2-\sqrt{3}$

3. $\dfrac{6}{\sqrt[4]{8}} = \dfrac{6}{\sqrt[4]{2^3}} \cdot \dfrac{2^{1/4}}{2^{1/4}}$

$= \dfrac{6 \cdot 2^{1/4}}{2}$

$= 3 \cdot 2^{1/4}$

4. $\left(\dfrac{2}{3r^2s^3z^6}\right)^2$

$= \dfrac{4}{9r^4s^6z^{12}}$

5. $\left(\dfrac{-2x^3y^4}{3x^{-2}y^3}\right)^{-4}$

$= \left(\dfrac{-2x^5y}{3}\right)^{-4}$

$= \left(\dfrac{16x^{20}y^4}{81}\right)^{-1}$

$= \dfrac{81}{16x^{20}y^4}$

6. $y^2\left(x^{-2}y^3\right)^2\left(\dfrac{1}{y^{-2}x}\right)^{-3}$

$= y^2x^{-4}y^6 \cdot \dfrac{1}{y^6x^{-3}}$

$= \dfrac{y^8}{x^4} \cdot \dfrac{x^3}{y^6}$

$= \dfrac{y^2}{x}$

7. Find the inverse of $g(x) = \log_2(x+4) - 7$ algebraically and state the domain of the inverse.

$x = \log_2(y+4) - 7$

$x+7 = \log_2(y+4)$

$2^{x+7} = y+4$

$y = 2^{x+7} - 4$

$g^{-1}(x) = 2^{x+7} - 4$

8. Find the inverse of $f(x) = 6 \cdot 5^{3-x} + 10$ algebraically and state the domain of the inverse.

$x = 6 \cdot 5^{3-y} + 10$

$x - 10 = 6 \cdot 5^{3-y}$

$\dfrac{x-10}{6} = 5^{3-y}$

$\log_5\left(\dfrac{x-10}{6}\right) = 3-y$

$f^{-1}(x) = 3 - \log_5\left(\dfrac{x-10}{6}\right), (10, \infty)$

9. Let $f(x)=\log_5(x-7)-3$ and $g(x)=5^{x+3}+7$. Show that $f(x)$ and $g(x)$ are inverses.

$f(g(x)) = \log_5(5^{x+3}+7-7)-3$

$= \log_5(5^{x+3}) - 3$

$= x+3-3$

$= x$

$g(f(x)) = 5^{\log_5(x-7)-3+3}+7$

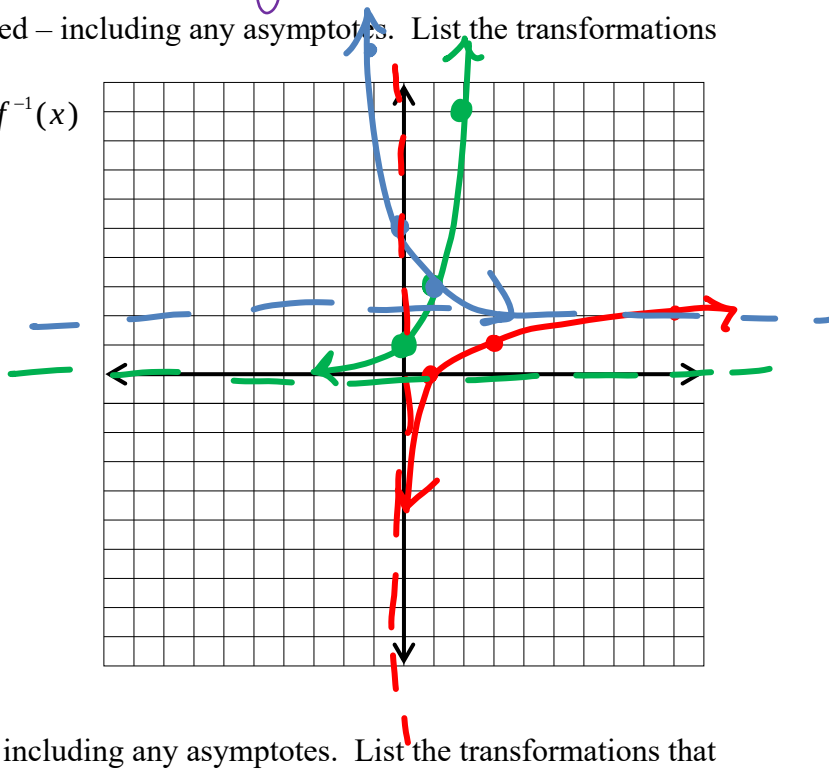
$= 5^{\log_5(x-7)}+7$

$= x-7+7$

$= x$

$f(g(x)) = x$ so they are inverses.

10. Graph $f(x)$, $f^{-1}(x)$, *and* $g(x)$ on the grid provided – including any asymptotes. List the transformations that change *f(x)* into *g(x)*. Also, write an equation for $f^{-1}(x)$

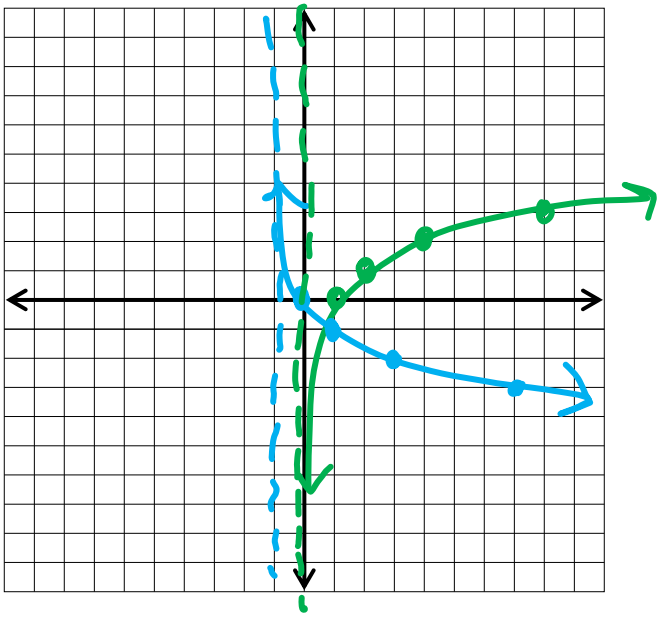


- $f(x)=3^x$
- $g(x)=3^{1-x}+2 = 3^{-x+1}+2$

- $f^{-1}(x) = \log_3 x$

$g(x)$: ① left 1
② reflect across y-axis
up 2

11. On the grid provided, graph both of *f(x)* and *g(x)* – including any asymptotes. List the transformations that change *f(x)* into *g(x)*.



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

$g(x)$: left 1
reflect across x-axis