Unit 6 Review Packet

Name Key

Evaluate the expression without a calculator.

1. $(\sqrt[3]{8})^{-2}$ $\frac{1}{4}$

2. $27^{\frac{2}{3}}$ 9

3. $(\sqrt[3]{-64})^4$ 256

Solve the equation. Round the result to two decimal place when appropriate.

4. $5x^3 = 1080$ $x = 6$

5. $x^6 - 34 = 181$ ± 2.45

6. $(x-5)^4 = 256$ $x = 9, 1$

Write the expression in simplest form. Keep exponents positive.

7. $\sqrt[3]{88}$ $2\sqrt[3]{11}$

8. $\frac{3}{\sqrt[3]{7}}$ $\frac{3\sqrt[3]{49}}{7}$

9. $(\sqrt[3]{3} \cdot \sqrt[4]{3})^{12}$ 2187

Simplify the expression.

10. $-6\sqrt[3]{2} + 2\sqrt[3]{256}$ $-2\sqrt[7]{2}$

11. $12\sqrt[4]{2} - 7\sqrt[4]{512}$ $-16\sqrt[4]{2}$

12. $2\sqrt[4]{1250} - 8\sqrt[4]{32}$ $-6\sqrt[4]{2}$

Find the domain of the following functions:

13. $\frac{2}{x-3}$ $x \neq 3$

14. $\frac{1}{3-2x}$ $x \neq \frac{3}{2}$

15. $\sqrt{x+5}$ $x \geq -5$

16. $\frac{6}{5x+3}$ $x \neq \frac{-3}{5}$

17. $\sqrt{3-x}$ $x \neq 3$

18. $\sqrt{4x-5}$ $x \neq \frac{5}{4}$

Let $f(x) = -2x^{\frac{2}{3}}$ and $g(x) = 7x^{\frac{2}{3}}$. Perform the following operations. Then find the domain.

19. $f(x) + g(x)$ $5x^{2/3}$ D: $\mathbb{R}$

20. $f(x) - g(x)$ $-9x^{2/3}$ D: $\mathbb{R}$

21. $f(x) * g(x)$ $-14x^{4/3}$ D: $\mathbb{R}$

22. $f(g(x))$ $-2\sqrt[3]{49x^{4/9}}$ D: $\mathbb{R}$

Find an equation for the inverse relation.

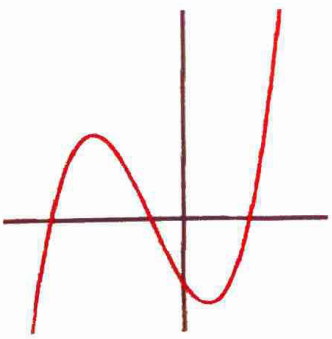
23. $y = -18x - 5$ $f^{-1}(x) = \frac{x+5}{-18}$

24. $y = 5x + \frac{1}{3}$ $f^{-1}(x) = \frac{x}{5} - \frac{1}{15}$

25. $y = 10x - 28$ $f^{-1}(x) = \frac{x+28}{10}$

Does the following graph represent a function? Does its inverse represent a function?

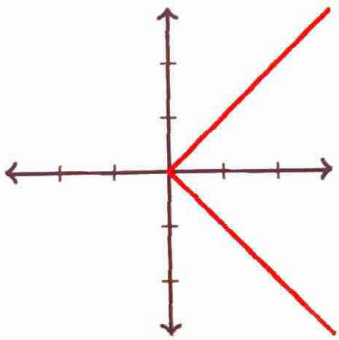
26.



a) yes

b) no

27.



a) no

b) yes

Verify that f and g are inverse functions.

28. $f(x) = \frac{1}{5}x - 1, g(x) = 5x + 5$

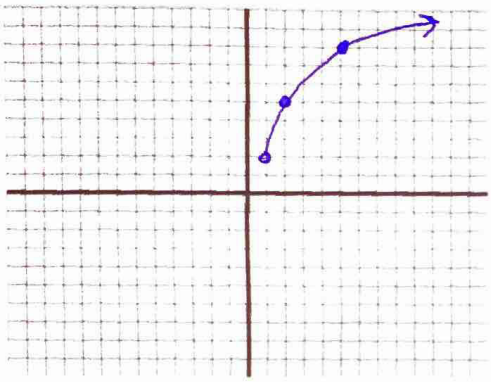
$f(g(x)) = x = g(f(x))$ yes

29. $f(x) = 2x + 3, g(x) = \frac{1}{2}x - \frac{3}{2}$

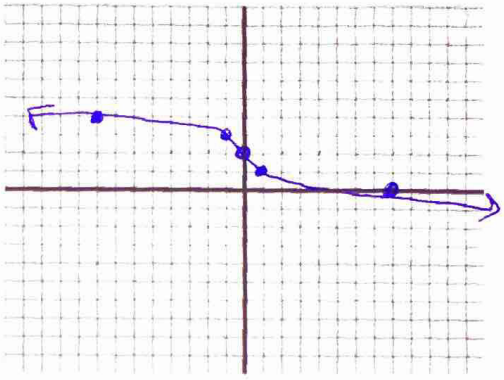
$f(g(x)) = x = g(f(x))$ yes

State the parent function and the transformations to the parent function in words before graphing the function. **Then state the domain and range.**

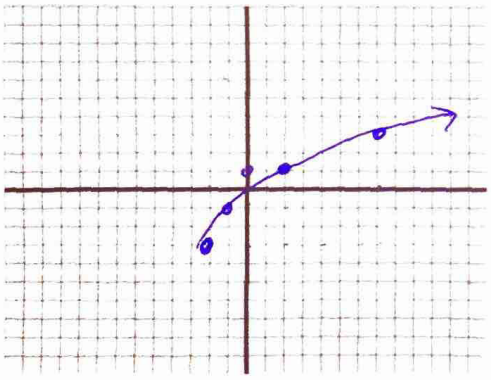
30. $y = 3\sqrt{x-1}+2$ stretch 3, right 1, up 2



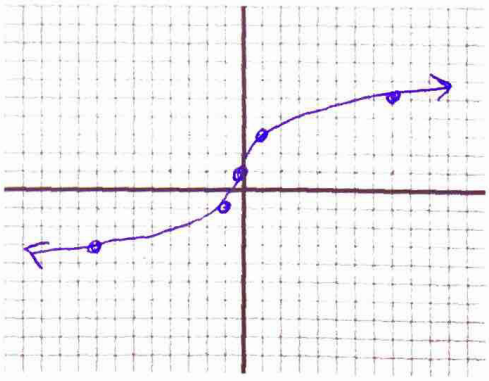
31. $y = -\sqrt[3]{x}+2$ reflect, up 2



32. $y = 2\sqrt{x+2}-3$ stretch 2, left 2, down 3



33. $y = 2\sqrt[3]{x}+1$ stretch 2, up 1



Solve the equation. Check for extraneous solutions.

34. $\sqrt[3]{12x} - 13 = -7$

$x = 18$

35. $\sqrt[3]{4x+2} - 6 = -10$

$x = -16.5$

36. $8\sqrt{10x} - 7 = 9$

$x = 2/5$

37. $\sqrt{-2x+3} - 2 = 10$

$x = -70.5$