

Chapter 6 Review #1 (6.1-6.4, 6.6)

Do all work on a separate sheet of paper.

No calculator part. Simplify completely without using a calculator.

1. $64^{\frac{2}{3}}$

2. $(-8)^{\frac{2}{3}}$

3. $\left(\frac{16x^8}{81y^{16}}\right)^{\frac{3}{4}}$

4. $16^{-\frac{1}{4}}$

5. $\sqrt[3]{16} \cdot \sqrt[3]{2}$

6. $\sqrt[3]{81x^3y^7z^2}$

7. $\sqrt[3]{-27x^3y^6z^9}$

8. $\sqrt{75} + \sqrt{27}$

9. Rewrite in exponential form:
 $\sqrt[3]{x^5}$

10. Rewrite in radical form:
 $x^{\frac{3}{7}}$

11. Rewrite in radical form:
 $(4x^2)^{\frac{3}{5}}$

12. Find $f(g(-3))$ when
 $f(x) = x^3 - 7$ and
 $g(x) = x - 2$

13. Simplify: $\frac{20}{\sqrt[4]{4}}$

Calculator OK part. ----- (below this line) -----

Given $f(x) = -5x$ and $g(x) = x + 3$ find $h(x)$, then state the domain of $h(x)$.

14. $h(x) = f(x) + g(x)$

15. $h(x) = f(x) \cdot g(x)$

16. $h(x) = \frac{f(x)}{g(x)}$

17. $h(x) = f(g(x))$

Find the inverse function. Write your answer like this: $f^{-1}(x) = \dots$

18. $f(x) = \frac{2}{3}x + 7$

19. $f(x) = x^3 + 4$

Solve, check for extraneous solutions, leave your answer in exact form:

20. $\sqrt{2x-6} = \sqrt{5x-15}$

Given $f(x) = x^{\frac{2}{3}}$ and $g(x) = x^6 + 2$ find $h(x)$, then state the domain of $h(x)$.

21. $h(x) = f(g(x))$

22. $h(x) = g(f(x))$

23. $h(x) = f(f(x))$

24. Given $f(x) = 125x^3 - 7$ find $f^{-1}(x)$

Solve, check for extraneous solutions, leave your answer in exact form:

25. $(x-2)^{\frac{1}{2}} - 3 = 8$

26. $3(x-5)^{\frac{3}{2}} - 6 = 18$

27. $2(5x^2 + 10)^{\frac{2}{3}} - 5 = 45$

28. $\sqrt{3x+7} = x+1$