# HW #33: SHOW ALL WORK on a separate piece of paper. No Calculator.

**Rewrite in radical notation.**

1. $7^{1/5}$

2. $(-11)^{3/4}$

3. $18^{5/2}$

**Evaluate without a calculator:**

4. $81^{3/4}$

5. $16^{5/4}$

6. $16^{-5/4}$

7. $\left(\dfrac{1}{216}\right)^{-1/3}$

8. $8^{-1/3}$

**Simplify:**

9. $\dfrac{25^{1/6}}{25^{2/3}}$

10. $\sqrt[3]{40} \cdot 4\sqrt[3]{5}$

11. $\sqrt[3]{81}$

12. $x^{1/3} \cdot x^{1/4}$

13. $\sqrt{64x^{12}}$

14. $\left(\dfrac{w^{25}}{x^{20}}\right)^{4/5}$

15. $4\sqrt[5]{5} + 8\sqrt[5]{5}$

16. $6\sqrt[7]{3} - 2\sqrt[7]{384}$

17. $\sqrt[4]{18x^8y^9z^3}$

18. Verify if the functions $f$ and $g$ below inverses of each other.

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

19. Verify if the functions $f$ and $g$ below inverses of each other.

$$f(x) = \frac{2}{3}x - \frac{1}{2}, \quad g(x) = \frac{3}{2}x - \frac{3}{4}$$

20. Sketch the graph of the function $f(x) = \dfrac{2}{3}x - 2$ and its inverse on the same coordinate plane.

**Find the inverse function.**

21. $f(x) = x^2 + 5; x \geq 0$

22. $f(x) = \dfrac{1}{2}x + 2$

**Let $f(x) = x^2 + 2x$ and $g(x) = x + 1$. Perform the indicated operation and state the domain.**

23. $f(x) + g(x)$

24. $f(x) - g(x)$

25. $f(x) \cdot g(x)$

26. $\dfrac{f(x)}{g(x)}$

27. $f\big(g(x)\big)$