PC11 Radicals Assignment

Name: _____

1. Evaluate $\sqrt{121}$

2. Solve $a^2 = 9$

3. Write as a mixed radical:
   a. $\sqrt{27}$

   b. $\sqrt{6125}$

4. Write as an entire radical
   a. $3\sqrt{5}$

   b. $2\sqrt[3]{3}$

   c. $-3\sqrt[3]{2}$

5. If possible, evaluate
   a. $\sqrt{-25}$

   b. $\sqrt[3]{-64}$

   c. $\sqrt{90000}$

   d. $\sqrt{0.04}$

   e. $\sqrt{\frac{1}{361}}$

6. Order from least to greatest: $\sqrt{16}, 4\sqrt{3}, 5, e$

7. $f(x) = \sqrt{x-2} + 1$
   a. Sketch and label 3 points

   b. Evaluate $f(27)$

   c. Domain?

   d. Range?

8. $y = \sqrt{x-p} + q$. Given $p, q < 0$, describe the transformation.

9. $y = -3\sqrt{x-2}$
   a. Sketch and describe the transformation

   b. Domain?

   c. Range?

10. $y = a\sqrt{x+b} + c$
    Given $a, b, c < 0$ describe the transformation.

11. $y = -\sqrt{x+5}$
    a. Domain?

    b. Range?

12. Find the domain of:
    a. $\sqrt{2-7x}$

    b. $\frac{\sqrt{1+3x}}{x^2-1}$

    c. $\frac{3\sqrt{x}}{x^2-9x+18}$

    d. $\frac{\sqrt{4x-7}}{2x^2+5x-12}$

13. Rationalize:
    a. $\frac{1}{\sqrt{3}}$

    b. $\frac{3}{\sqrt{27}}$

    c. $\frac{4}{2-\sqrt{8}}$

    d. $\frac{2}{\sqrt[3]{2}}$

14. Simplify $\sqrt{8}-4\sqrt{2}$

15. Simplify $\sqrt{8}-\sqrt[3]{32}-2\sqrt{2}+\sqrt[3]{4}$

16. Simplify $\frac{-3+\sqrt{27}}{3}$

17. $4\sqrt{3} \cdot 5\sqrt{2}$

18. $\sqrt{3} \cdot \sqrt{5} \cdot \sqrt{7}$

19. $a^b \cdot \sqrt{d} \cdot a^c \cdot \sqrt[3]{d}$

20. Expand and simplify:
    a. $3\sqrt{2}(\sqrt{4} + 2\sqrt{3} - 1)$

    b. $(3 - \sqrt{2})^2$

    c. $(\sqrt{2} - \sqrt{3})(\sqrt{6} + \sqrt{3})$

    d. $-2(\sqrt{8} - \sqrt{2})(1 - \sqrt{8})$

    e. $(\sqrt{27} - 1)^3$

    f. $(\sqrt{3} - \sqrt{2})(1 + \sqrt{5} + 3)$

21. A rectangle has a base of $5\sqrt{2} - 3\sqrt{3}$
and a height of $2\sqrt{8} - \sqrt{3}$
    a. Area in simplified form?

    b. Perimeter in simplified form?

22. A cylinder has a diameter of $\sqrt{125}$ and a height of 100
    a. Volume?

    b. Area including the bottom?

23. Solve:
    a. $\sqrt{x} = 9$

    b. $3\sqrt{x} = 5$

    c. Solve $\sqrt{x+1} = 3$

24. $\sqrt{x-2} = 4 - x$

a. Estimate the solution graphically

b. Find the point of intersection algebraically

c. Check for extraneous roots

d. Find the point of intersection

25. Solve $\sqrt{x+3} = 5 - \frac{1}{3}x$

26. Define: $|a|$

27. Simplify $\sqrt{x^2y^4}$