F. S. T. **Name _____**

Ch. 6 Review **Block _____ Date _____**

Non-Calculator

Simplify and/or evaluate:

1. $y^5 \bullet y^7$
2. $\dfrac{x^2}{x^8}$
3. 49^0
4. $\sqrt[3]{-729}$
5. $\sqrt[4]{-625}$
6. $27^{\frac{5}{3}}$
7. $\left(x^2\right)^5$
8. $64^{\frac{-2}{3}}$
9. $\log_5 625$
10. $\log_{\frac{1}{256}} 4$

Expand or condense each logarithm:

11. $\log_2 \dfrac{x^3}{5}$
12. $\log 4 + 2\log x - \log 5$
13. $\log_7 \dfrac{1}{x^2}$

Sketch a graph. Then give the domain and range.

14. $y = 2^x$
15. $y = \log_2 x$

Use $\log 2 \approx 0.301$ *and* $\log 3 \approx 0.477$ *to evaluate:*

16. $\log 6$
17. $\log \dfrac{3}{4}$

Solve:

18. $\dfrac{1}{3}\ln 27 = \ln x$
19. $\log_7 x - \log_7 12 = \log_7 2$

Calculator Allowed

20. Write *r* as a function of *V*: $V = \frac{4}{3}\pi r^2 h$

21. Sue deposits $1300 at an annual interest rate of 6.25%.
    a. How much does she have in the account after 5 years of interest compounded monthly?

    b. How much does she have in 5 years compounded continuously?

22. Jonah invests $577.53 at 7.5% interest compounded quarterly. What is the effective annual yield?

Solve:

23. $4e^x - 6 = 87$

24. $9^{x+3} + 5 = 70$

25. $5\log_7(2x-3) = 14$

26. The equation $T(d) = T_0\left(\frac{1}{2}\right)^{\frac{d}{10}}$ gives the toxicity of sewage after *d* days of treatment. T_0 is the initial value of toxicity.
    a. Evaluate $T(4)$ if $T_0 = 12$.

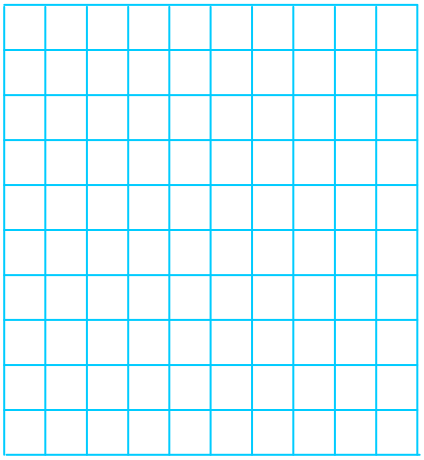
    b. What value of *d* would give a toxicity of 5 if $T_o = 14$?

27. Rewrite *y* as a function of *x*:
    $\ln y = 2.75x + 1.08$

28. Rewrite as a linear function:
    $y = 2.8(1.3)^x$

29. The Femur is a large bone located in the leg or hind limb of a human or animal. The table shows the average circumference C of the femur for several species of animals. It also shows each animal's average weight W.

Animal	**C (mm)**	**W (kg)**
Meadow Mouse	5.5	0.047
Gray Squirrel	13	0.399
Porcupine	34	7.20
Yellow Baboon	57	28.6
Lion	93.5	143
Polar Bear	135	448
Giraffe	173	710



a. Make a scatter plot of the data pairs (log C, log W).

b. Find a Linear Regression equation for your data pairs from (a).

c. Rewrite your equation giving *C* as a function of *W*.

Chapter 2 and 3 Review

Non-Calculator

30. Let $S = \{(3,5),(-2,6),(3,-1),(4,-2)\}$

a. State the domain and range of *S*.

b. Is *S* a relation? A function? Or both?

31. Let *f* be the function $f(x) = (x-7)^3 - 2$.

a. Identify the parent function, $p(x)$.

b. State the translation rule that maps *p* to *f*.

32. Consider the function $g(x) = |x|$.

a. Find an equation for the image of the graph under the transformation $S : (x, y) \to \left(\frac{1}{4}x, 2y\right)$.

b. Describe in words the effect *S* has on the graph of *g*.

Calculator Allowed

33. Evaluate $\left| 2.3 - \left\lfloor \frac{1}{2}(3.7) + 4.8 \right\rfloor \right|$.

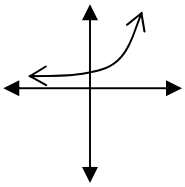
F.S.T. Chapter 6 Review Key

1. y^{12} 2. $\frac{1}{x^6}$ 3. 1 4. -9 5. No Solution

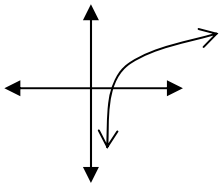
6. 243 7. x^{10} 8. $\frac{1}{16}$ 9. 4 10. $-\frac{1}{4}$

11. $3\log_2 x - \log_2 5$ 12. $\log\frac{4x^2}{5}$ 13. $-2\log_7 x$

14. D: $x = \Re$
R: $y > 0$



15. D: $x > 0$
R: $y = \Re$



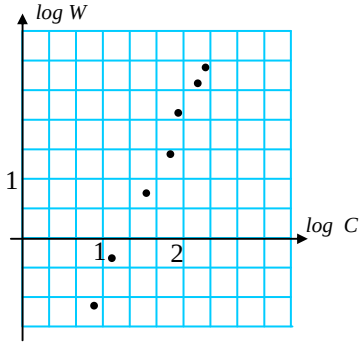
16. 0.778 17. -0.125 18. $x = 3$ 19. $x = 24$

20. $r = \sqrt{\frac{3V}{4\pi h}}$ 21. a) \$ 1775.45 b) \$ 1776.89 22. 7.71%

23. $x = 3.15$ 24. $x = -1.1$ 25. $x = 117.7$

26. a) 9.09 b) 14.9 days 27. $y = 2.94(15.64)^x$ 28. $\log y = 0.114x + 0.447$

29. a)



b) $y = 2.86x - 3.51$ c) $W = .00031C^{2.86}$

30. a) $D: \{-2, 3, 4\}$; $R: \{-2, -1, 5, 6\}$ b) S is a relation; S is not a function.

31. a) $p(x) = x^3$ b) $(x, y) \rightarrow (x + 7, y - 2)$

32. a) $y = 2|4x|$ b) S gives a horizontal shrink of $\frac{1}{4}$ and a vertical stretch of 2.

33. -3