

Problem Set 2

NAME

DATE

Due start of class on Day 6.

1. Exponents and Logarithms

- (a) Multiply $x^4y^3z^2(1 + x^2y^2)$
- (b) Simplify $((xy)^{-6})^{0.5}y^3z^3$
- (c) Simplify $((xy)^2)^{1.5}x^{-3}y^{-3}$
- (d) Solve $\ln(e^5/e^{2.5})$
- (e) Simplify $e^{\ln 7.14}$
- (f) What is $\log_{7134\pi}(1)$?
- (g) Solve for x $\log_x(16) = 4$
- (h) Combine into one term: $\log(3x) + 2\log(y)$

2. Inequalities and Absolute Values

- (a) “Solve” for x : $x + y + 2 < 4$
- (b) “Solve” for x : $(-4)(x + 7) \geq -24$
- (c) What is the absolute value of -24 ?
- (d) Graph $y = |x + 2|$
- (e) On number line, graph $|x + 2| \geq 3$
- (f) On number line, graph $|x - 7| < 1$
- (g) On number line, graph $|2x - 2| = 4$

3. Factor

- (a) $x^2 + 5x + 4$
- (b) $6m^2 + 8m - 8$
- (c) $5y^2 - 12yz + 7z^2$

4. Functions

- (a) What is the difference between a function and relation (in words)?
- (b) Simplify $h(x) = g(f(x))$, where $f(x) = x^2 + 4$ and $g(x) = \sqrt{x - 4}$
- (c) Find the inverse function of $f(x) = 5x - 3$
- (d) What is a quadratic function? (define and provide example)
- (e) Why do we care if a function is monotonically doing anything?

5. Exponent(ials) Explain the difference between, and provide an example of, the following. Be sure to use an example different from the slides:

- (a) Exponent:
- (b) Exponential:
- (c) Exponential Function:

6. Matrices:

- (a) Write out '6 choose 3' mathematically and solve.
- (b) Add these two matrices: $\begin{bmatrix} 2 & 4 & 2 \\ 1 & 4 & 0 \\ 2 & 6 & 0 \end{bmatrix} + \begin{bmatrix} 5 & 1 & 1 \\ 2 & 2 & 2 \\ 4 & 1 & 3 \end{bmatrix}$
- (c) Multiply these two matrices: $\begin{bmatrix} 2 & 4 & 2 \\ 1 & 4 & 0 \\ 2 & 6 & 0 \end{bmatrix} * \begin{bmatrix} 5 & 1 & 1 \\ 2 & 2 & 2 \\ 4 & 1 & 3 \end{bmatrix}$
- (d) Provide an example matrix, showing what happens when you multiply by the identity matrix.

7. Topics and Questions

- (a) List three things you struggled with on today's assignment.
- (b) What is your plan for improving the items listed above?
- (c) What percent of the material was new to you today?
- (d) What is one new concept you learned today?
- (e) What question do you still have about the material?