

Supplies:

- Paper – lined and graphed
- Lots of pencils
- Notebook: your own organization will be fine
- Folder – to store all quizzes, tests (You will be asked to return them)
- Graphing Calculator – We recommend the TI 84 Plus (No TI 85s or higher) You must have your own graphing calculator

Assignment: Complete on your paper and attach it to this assignment. Calculators are allowed on this assignment. You may ask for help, but the work must be your own and you should be able to solve all of the problems yourself. It is recommended that you complete this in August. This assignment will be collected on the first day of class

1. Name the sets of numbers to which 14 belongs.

- a) Natural b) irrational
c) whole numbers d) rational

2. Find the range of the relation $\{(-3, 0), (-2, 0), (1, 4)\}$

3. The graph of which equation is a line with undefined slope that passes through (5, 1)

- a) $y = 1$ b) $y = 5$
c) $x = 1$ d) $x = 5$

4) Which point does not satisfy the inequality $y < |2x - 3|$?

- a) (0, 2) b) (-1, -3)
c) (1, 3) d) (2, 0)

5) To solve the system of equations $3x - y = 5$ and $2x + 3y = 18$, which expression could be substituted for y into the second equation?

- a) $5 - 3x$ b) $3x - 5$
c) $6 - 23x$ d) $18 - 2x$

6) Graph the following system
 $y \geq 2x + 4$ and $y > \frac{-2}{3}x + 2$

7) Evaluate $\frac{6 \times 10^{-2}}{20 \times 10^{-5}}$

- a) 0.3×10 b) 3×10^2
c) 0.3×10^{-3} d) 3×10^{-4}

8) Simplify $(5 + 2\sqrt{3})(2 - 4\sqrt{3})$

- a) $10 - 8\sqrt{3}$ b) $-62 - 16\sqrt{3}$
c) -14 d) $-14 - 16\sqrt{3}$

9) Solve $\sqrt[3]{y - 3} - 6 = 4$

10) The quadratic equation $9x^2 + 6x + 1 = 9$ is to be solved by completing the square. Which equation would not be a step in that solution? 1

- a) $\left(x + \frac{1}{2}\right) = 1$ b) $x - \frac{1}{3} \pm 1$
c) $9x^2 + 6x - 8$ d) $x^2 + \frac{2}{3}x + \frac{1}{9} = 1$

11) Solve the inequality $-x^2 + 25 < 0$ and graph the solution set.

12) Determine which pair of functions are NOT inverse.

- a) $g(x) = 3x - 5$ and $h(x) = \frac{x+5}{3}$
b) $g(x) = \frac{4}{3}x$ and $h(x) = \frac{3}{4}x$
c) $g(x) = 2x - 8$ and $h(x) = \frac{x}{2} + 8$
d) $g(x) = \frac{x}{3} + 1$ and $h(x) = 3x - 3$

13) Simplify $7(4 - x) - 5(x + 1)$

14) Define a variable and write an inequality. Then solve. A shelf in a lumber yard will safely hold up to 1000 pounds. A crate on the shelf is marked 270 pounds. What is the greatest number of sheets of plywood, each weighing 7 pounds that may safely be stacked on the shelf?

15) Solve: $10 \leq 9 + 21(1 + m) < 19$. Describe the solution set using interval notation. Then graph the solution set on a number line

16) If $f(x) = 4(x - 3)^2$, find $f(2a)$

17) What is the slope of a line that is perpendicular to the graph of the line passing through (2, 1) and (3, 5)

18) Graph the piecewise function and identify the domain and range

$$f(x) : 3x \text{ if } x \leq 1$$

$$- 2x + 2 \text{ if } x > 1$$

19) Solve the system

$7x + 3y = -1$ and $2x - y = 9$ by using elimination.

For questions 20 -22, simplify and assume that no variable equals 0

20) $(3x^2)^2 (4x^5)(2x^0y^{-2})$

28) One factor of $x^3 - 5x^2 - 8x = 12$ is $x + 2$. Find the remaining factors.

29) Find all the zeros of the function

$$f(x) = x^3 = 6x^2 = 16x = 96$$

30) Find $(f - g)(x)$ and $(f \circ g)(x)$

$$\text{if } f(x) = 4x - 9 \text{ and } g(x) = 3x^2$$

31) Find the inverse of the function $p(x) = 4x - 8$

32) Graph $y = -\sqrt{x - 4} + 5$. Then state the domain and range of the function.

33) Find the exact solutions of equations

$$x^2 = 2y^2 = 18 \text{ and } x = 2y$$

For questions 34 -37, simplify and assume that no variable equals 0

34) Simplify the expression

$$\frac{x - y}{2x} \cdot \frac{2x + 1}{y - x}$$

21) $(2x - 3y)(x + 5y)$

22) $2i(3 - 4i) - (-1 + i)$

23) Solve by factoring $x^2 + 2x = 63$

24) Solve by completing the square:

$$x^2 - 4x + 13 = 0$$

25) Find the exact solutions to $7x^2 + 6x = 1$ by using

the Quadratic Formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

26) Determine whether the function

$f(x) = 3x^2 + 6x - 11$ has a minimum or a maximum and find that value

27) Write an equation for the parabola with vertex at (-2, 3) and y- intercept -1

35) Simplify the expression

$$\frac{\frac{p^2 - 3p}{p^2 - 6p + 9}}{\frac{20}{4p - 12}}$$

36) Simplify the expression

$$\frac{2x + 10}{x^2 - 25} - \frac{1}{x - 5}$$

37) Simplify for a

$$\frac{a}{a - 5} - \frac{2}{b + 3}$$

38) Solve for x

$$\frac{2}{x + 3} - \frac{3}{4 - x} = \frac{2x - 2}{x^2 - x - 12}$$

39) Solve for x

$$\frac{15}{x} + \frac{9x - 7}{x + 2} = 9$$

40) Determine the equations of any vertical asymptotes and the values of x for any holes in the graph of

$$f(x) = \frac{x^2 - 11x + 18}{x - 2}$$