FALL 2016 MATH 1314 REVIEW EXAM 1

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the equation by the zero-factor property.

1) $10x^2 + 27x + 18 = 0$ 1) _____

A) $\left\{-\frac{6}{5}, -\frac{3}{2}\right\}$ B) $\left\{\frac{5}{6}, \frac{2}{3}\right\}$ C) $\left\{-\frac{5}{6}, -\frac{3}{2}\right\}$ D) $\left\{\frac{6}{5}, \frac{3}{2}\right\}$

Use the square root property to solve the equation.

2) $(x + 9)^2 = 49$ 2) _____

A) {16, 2} B) {-16, -2} C) {-2} D) {-58}

3) $(5x - 1)^2 = 5$ 3) _____

A) $\left\{\frac{1 \pm \sqrt{5}}{5}\right\}$ B) $\{1 \pm \sqrt{5}\}$ C) $\left\{\pm\frac{1 + \sqrt{5}}{5}\right\}$ D) $\left\{\pm\frac{\sqrt{3}}{5}i\right\}$

Solve the equation using the quadratic formula.

4) $4x^2 = -8x - 1$ 4) _____

A) $\left\{\frac{-2 \pm \sqrt{3}}{8}\right\}$ B) $\left\{\frac{-2 \pm \sqrt{5}}{2}\right\}$ C) $\left\{\frac{-2 \pm \sqrt{3}}{2}\right\}$ D) $\left\{\frac{-8 \pm \sqrt{3}}{2}\right\}$

Use the discriminant to determine the number of distinct solutions and whether they are rational, irrational, or nonreal complex.

5) $s^2 - 5s + 4 = 0$ 5) _____

A) One rational solution (a double solution) B) Two distinct rational solutions
C) Two distinct irrational solutions D) Two distinct nonreal complex solutions

6) $t^2 - 8t + 16 = 0$ 6) _____

A) One rational solution (a double solution) B) Two distinct rational solutions
C) Two distinct irrational solutions D) Two distinct nonreal complex solutions

7) $9x^2 - 12x + 4 = 0$ 7) _____

A) One rational solution (a double solution) B) Two distinct rational solutions
C) Two distinct irrational solutions D) Two distinct nonreal complex solutions

Decide what values of the variable cannot possibly be solutions for the equation.

8) $\frac{1}{x - 5} + \frac{1}{x + 9} = 10$ 8) _____

A) -9, 5 B) $-\frac{1}{5}, \frac{1}{9}$ C) $-\frac{1}{9}, \frac{1}{5}$ D) -5, 9

Solve the equation.

9) $\frac{2}{x + 9} + \frac{5}{x + 2} = \frac{3}{x^2 + 11x + 18}$ 9) _____

A) $-\frac{46}{7}$ B) $-\frac{44}{5}$ C) - 1 D) ∅

10) $\sqrt{x + 7} + 5 = x$ 10) _____

A) {2, 9} B) {9} C) {2} D) {9, 18}

11) $6x^{2/5} + 16x^{1/5} + 8 = 0$ 11) _____

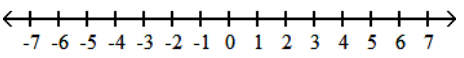
A) $\left\{-2, -\frac{2}{3}\right\}$ B) $\left\{-32, -\frac{32}{243}\right\}$ C) $\left\{32, \frac{32}{243}\right\}$ D) {2, 3}

12) $(3x - 6)^2 + 5(3x - 6) + 4 = 0$ 12) _____

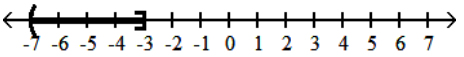
A) $\left\{\frac{7}{3}, -\frac{10}{3}\right\}$ B) $\left\{\frac{5}{3}, -\frac{2}{3}\right\}$ C) $\left\{-\frac{7}{6}, \frac{10}{3}\right\}$ D) $\left\{\frac{5}{3}, \frac{2}{3}\right\}$

Solve and graph the inequality. Give answer in interval notation.

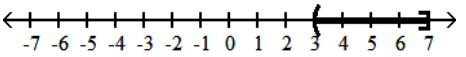
13) $19 < -5x + 4 \leq 39$ 13) _____



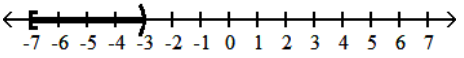
A) (-7, -3]



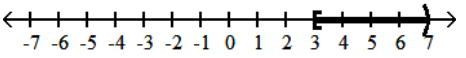
B) (3, 7]



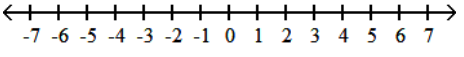
C) [-7, -3)



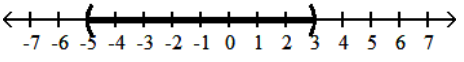
D) [3, 7)



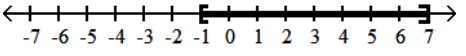
14) $-1 \leq \frac{x + 1}{2} \leq 3$ 14) _____



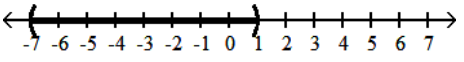
A) [-5, 3]



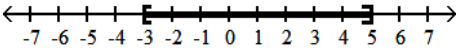
B) [-1, 7]



C) (-7, 1)



D) [-3, 5]



Solve the quadratic inequality. Write the solution set in interval notation.

15) $x^2 - 9x + 18 > 0$ 15) _____

A) $(-\infty, 3)$ B) $(-\infty, 3) \cup (6, \infty)$ C) (3, 6) D) $(6, \infty)$

16) $x^2 - 4x - 21 \leq 0$ 16) _____

A) $(-\infty, -3] \cup [7, \infty)$ B) $(-\infty, -3]$ C) $[7, \infty)$ D) [-3, 7]

Solve the rational inequality. Write the solution set in interval notation.

17) $\frac{x - 7}{x + 8} \leq 0$ 17) _____

A) (-8, 7] B) [-7, 8] C) (-7, 8] D) [-8, 7]

18) $\frac{x + 17}{x + 7} < 5$ 18) _____

A) $\left(-\infty, -\frac{9}{2}\right) \cup (7, \infty)$ B) $\left(-7, -\frac{9}{2}\right)$

C) $(-\infty, -7) \cup \left(-\frac{9}{2}, \infty\right)$ D) $\emptyset$

Solve the inequality. Write the solution set in interval notation.

19) $|9 - 9x| > 2$ 19) _____

A) $\left(-\infty, -1\right) \cup \left(-\frac{13}{9}, \infty\right)$ B) $\left(-\infty, \frac{7}{9}\right) \cup \left(\frac{11}{9}, \infty\right)$

C) $\left(-\frac{11}{9}, \frac{7}{9}\right)$ D) $\left(-\frac{7}{9}, -\frac{11}{9}\right)$

20) $|4x + 5| < 14$ 20) _____

A) $\left(-\infty, -\frac{19}{4}\right)$ B) $\left(-\frac{19}{4}, \frac{9}{4}\right)$

C) $(-\infty, 4)$ D) $\left(-\infty, -\frac{19}{4}\right) \cup \left(\frac{9}{4}, \infty\right)$

Solve.

21) $|x - 1| + 5 = 13$ 21) _____

A) {9} B) {9, -7} C) {-9, 7} D) $\emptyset$

22) $|x + 3| - 5 > 16$ 22) _____

A) (-24, 18) B) $(-\infty, -24) \cup (8, \infty)$

C) $(-\infty, -8) \cup (24, \infty)$ D) $(-\infty, -24) \cup (18, \infty)$

23) $|5x - 3| - 5 < 4$ 23) _____

A) $\left(-\infty, -\frac{6}{5}\right) \cup \left(\frac{12}{5}, \infty\right)$ B) $\left(-\infty, -\frac{6}{5}\right)$

C) $\left(-\frac{6}{5}, \frac{12}{5}\right)$ D) $\emptyset$

Solve the polynomial equation. In order to obtain the first root, use synthetic division to test the possible rational roots.

24) $x^3 + 2x^2 - 9x - 18 = 0$ 24) _____

A) {-2} B) {-3, 2, 3} C) {-3} D) {-3, -2, 3}

25) $x^3 - 3x^2 - x + 3 = 0$ 25) _____

A) {1, 1, 3} B) {1, -1, 3} C) {1, -1, -3} D) {-1, 1, -3}