Section 1 – Expanding and Simplifying

Use proper order of operations to expand and simplify the following expressions:

1. $3(5 \quad 4) \quad 4(3 \quad + 1)$
2. $6 \quad 4(1 \quad 3) + 2 \quad (\quad 6)$
3. $(3 \quad + 2)$
4. $(\quad + \quad 4)$
5. $(3 \quad + \quad 2) \quad (3 \quad 2)$
6. $(\quad 5)$

Section 2 –

Section 3 – Rational Expressions

1. For what values of *x* is the expression ——— not defined?
2. Simplify: ———
3. Combine ——— —— into a single expression.
4. Simplify: $\frac{(\quad)\quad(\quad)}{(\quad)}$ Hint: factor the top to start.
5. Simplify: $\frac{\quad\quad\quad\quad}{\quad\quad\quad\quad}$

Section 4 – Solving Equations

1. Solve the linear equation: – – = 4 + 2(3 5)
2. Solve the following polynomial equations:

   a) 10 24 = 0

   b) 3 8 + 2 = 0 (Use the Quadratic Formula)

   c) 4 12 9 + 27 = 0 (Hint: factor)

   d) (3)(+ 6) = 10

3. Solve the following rational equations:

   a) $\frac{\quad\quad\quad}{(\quad)}$ = 0

   b) ——— —— = 0

   c) ——— = 0

   d) – + – = —

4. Solve the following radical equations:

   a) $\sqrt{7 + 1}$ 8 = 0

   b) $\sqrt{2 \quad 4 \quad 21}$ = 0

Section 5 – Solving Inequalities

1. Solve the linear inequality: $9 \quad 4(2 \quad 3) \quad 3(5 \quad 2)$

2. Solve the following inequalities by simplifying to make one side zero (if needed), finding all values for which the expression is zero or undefined and then using test points on a number line. Give your answers using interval notation.

   a) $8 + 14 < 2$

   b) $(4 \quad)(\quad 1)(\quad + 2) > 0$

   c) $\frac{\qquad}{\qquad} \quad 0$

   d) $\frac{\qquad}{\qquad} \quad 1$

Section 6 – Exponents and Radicals

Answers

Section 1:

1. 11 24
2. 2 + 2
3. 9 + 12 + 4
4. + + 16 + 2 8
5. 9 + 18
6. 15 + 75 125

Section 2:

1. 3 (5 2)
2. (9)(+ 2)
3. 5 (2)(3)
4. (2 3)(+ 4)
5. (3)(+ 3)(4)
6. 8 (2 5) (8 5)
7. (+ 1) (4 3) (33 + 32 9)

Section 3:

1. = 0, 2, 2
2. + 6, 3
3. $\frac{\qquad\qquad}{(\quad)(\quad)}$
4. $\frac{\qquad}{(\quad)}$
5. $\frac{\qquad\qquad\qquad}{(\quad)(\quad)}$, 0

Section 4:

1. = –
2. a) = 12, 2
   b) = 2.39, 0.28
   c) = 3, –, –
   d) = 4, 7
3. a) = 1, –
   b) = 3, 1
   c) = 5
   d) = —
4. a) = 9
   b) = 7

Section 5:

1. 3

2. a) $(2, 6)$ b) $(\ \ 2, 1) \quad (1, 4)$

   c) $[\ \ 3, 1] \quad (5, \ \ )$ d) $(\ \ 2, 3]$

Section 6:

1. a) $^{-}$ b) $(2 \quad + 1)^{-}$ c) $2\ ^{-} + 6$

2. a) $\frac{}{}$ b) $\frac{}{} + \frac{}{}$ c) $\frac{}{+}$

3. 18.7208

4. $\frac{}{}$ 5. It cannot be simplified any further.

6. $\frac{}{}$ 7. $6 \quad (6 \quad + 1)(4 \quad + 1)^{-}$

8. $\frac{(\ ^{-} \quad ^{-})}{}$ 9. $\frac{}{\frac{}{}}$