

1. Rewrite the following without the absolute value and simplify.

$$(|-3| |5 + |-9|)$$

- A. $|-12|$
- B. 42
- C. 12
- D. $|-42|$
- E. None of the above

2. Simplify. Do not leave negative exponents in your answer.

$$\frac{(3x^{-4})(|-2x^6|)}{12x^9}$$

- A. $|- \frac{1}{2x^7}|$
- B. $|-8x^{11}|$
- C. $|- \frac{1}{2x^{15}}|$
- D. $\frac{x^{11}}{8x^4}$
- E. $|- \frac{x^{11}}{2}|$

3. Simplify. Do not leave negative exponents in your answer.

$$\left(|-4x^0y^{|3}z^6|\right)^2$$

- A. $\frac{x^2z^8}{16y}$
- B. $\frac{16z^{12}}{y^6}$
- C. $|- \frac{4x^2z^8}{y}|$
- D. $|- \frac{8z^{12}}{y^6}|$
- E. None of the above

4. Simplify completely.

$$\left(\sqrt{15x^5y^7}\right)\left(\sqrt{5x^3y^5}\right)$$

A. $2x^7y^{17}\left(\sqrt{5xy}\right)$

B. $5x^4y^6\left(\sqrt{3}\right)$

C. $2x^4y^6\left(\sqrt{5xy}\right)$

D. $2x^4y^6\left(\sqrt{5}\right)$

E. $5x^7y^{17}\left(\sqrt{3xy}\right)$

5. Divide and express as a polynomial.

$$\frac{8a^6b^2 \square 16a^{12}b^7 + 12a^6b^6}{4a^3b}$$

A. $8a^3b^2 \square 4a^7b^7 + 12a^6b^6$

B. $2a^2b^2 \square 4a^4b^7 + 3a^2b^6$

C. $a^{21}b^{14}$

D. $2a^3b \square 16a^{12}b^7 + 12a^6b^6$

E. None of the above

6. Multiply and express as a polynomial.

$$(3x \square 5y)^2$$

A. $9x^2 \square 15xy + 25y^2$

B. $9x^2 \square 25y^2$

C. $9x^2 \square 30xy + 25y^2$

D. $3x^2 \square 5y^2$

E. None of the above

7. Which of the following is a factor of $16y^4 \square 81$?

A. $4y \square 3$

B. $2y \square 9$

C. $4y + 9$

D. $2y + 3$

E. None of the above

8. Simplify completely.

$$\frac{\frac{2}{x+h} - \frac{2}{x}}{h}$$

A. $\frac{2}{x(x+h)}$

B. $\frac{1}{x(x+h)}$

C. $\frac{2h^2}{x(x+h)}$

D. $\frac{1}{x+h}$

E. None of the above

9. Rationalize the denominator and simplify.

$$\frac{\sqrt{m} - 5}{\sqrt{m} + 3}$$

A. $\frac{m - 15}{m + 9}$

B. $\frac{m - 25}{m + 9}$

C. $\frac{m - 8\sqrt{m} + 15}{m - 9}$

D. $\frac{m + 15}{m - 9}$

E. $\frac{m - 2\sqrt{m} - 15}{m + 3}$

10. Solve for x .

$$4x^2 - 17x + 15 = 0$$

A. $x = -\frac{3}{4}, x = 5$

B. $x = \frac{3}{2}, x = \frac{5}{2}$

C. $x = -15, x = \frac{1}{2}$

D. $x = \frac{5}{4}, x = 3$

E. None of the above

11. Solve the following equation. Choose the answer that best describes the solution(s).

$$\frac{7}{6(x+3)} + \frac{5}{6(x-3)} = \frac{2x-1}{x^2-9}$$

- A. There is only one solution.
It is between 1 and 2.
- B. There is only one solution.
It is $x = 0$.
- C. There is only one solution.
It is between 0 and 1.
- D. There is no solution.
- E. All real numbers are solutions
except $x = \pm 3$.

12. Solve $W = \frac{3n+p}{n}$ for n .

- A. $n = \frac{3+p}{W}$
- B. $n = \frac{W+3}{p}$
- C. $n = \frac{3W+p}{W}$
- D. $n = \frac{W-3}{p}$
- E. $n = \frac{p}{W-3}$

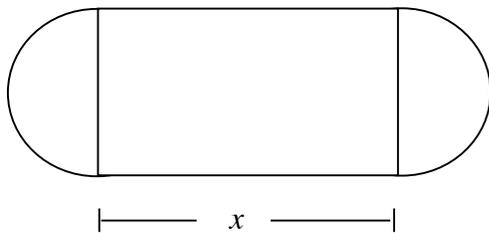
13. A workman has a basic hourly wage and earns time and a half (his hourly wage plus another half of that wage) for hours worked in excess of 40. His paycheck for one week was \$750 and he worked a total of 48 hours that week. If x represents the basic hourly wage, write an equation that would be used to find x . Do not solve.

- A. $x + 1.5x = 750$
- B. $x + 1.5(48 - x) = 750$
- C. $40x + 12x = 750$
- D. $40x + 4x = 750$
- E. $40x + 60(48 - x) = 750$

14. A boat travels at a constant rate of 8 miles per hour in still water. It travels upstream for $\frac{3}{4}$ of an hour. It then turns around and travels downstream, returning to the starting point, in $\frac{1}{2}$ of an hour. Find the rate of the current.

- A. $\frac{8}{5}$ mph
 B. $\frac{5}{4}$ mph
 C. $\frac{3}{2}$ mph
 D. 10 mph
 E. None of the above

15. A conference table is to be constructed in the shape of a rectangle with two equal-sized semicircles on either end (see the figure). Let x represent the length of the rectangle. The diameter of each semicircle is 7 feet and the total area of the table is to be 110 square feet. Find the equation that would be used to find x . Simplify the equation. Do not solve the equation.



- A. $8x + 49\pi = 384$
 B. $7x + 49\pi = 110$
 C. $7x + 7\pi = 440$
 D. $28x + 49\pi = 440$
 E. $2x + 7\pi = 110$