1. Given that $x < 0$ and $y > 0$, which of the following values must be negative?

A. $x^2 y$

B. $x^2 + y$

C. $\dfrac{y - x}{x}$

D. $y^2 - x$

E. None of the above

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

$$\frac{6x^{-5}y^4z^{-3}}{18x^{-9}y^{-2}z}$$

A. $\dfrac{x^4y^6}{3z^4}$

B. $\dfrac{y^2}{3x^{14}z^4}$

C. $\dfrac{y^6z^2}{3x^4}$

D. $\dfrac{x^{14}z^4}{3y^2}$

E. None of the above

3. Simplify.

$$\left(8x^{\frac{5}{6}}\right)^{-\frac{2}{3}}\left(x^{\frac{2}{9}}\right)^{-}$$

A. $\dfrac{16}{3}x^{\frac{10}{9}}$

B. $4x^{\frac{7}{9}}$

C $\dfrac{16}{3}x^{\frac{7}{9}}$

D. $4x^{\frac{10}{9}}$

E. None of the above

4. Rationalize the denominator and simplify the result.

$$\frac{x^2 - 16}{\sqrt{x} - 2}$$

A. $(x - 4)(\sqrt{x} + 2)$

B. $x - 8$

C. $(x - 4)(\sqrt{x} - 2)$

D. $\dfrac{(x + 4)(x - 4)(\sqrt{x} - 2)}{x - 2}$

E. $(x + 4)(\sqrt{x} + 2)$

5. Multiply and express as a polynomial.

$$(x)(3x - 4)^2$$

A. $9x^4 + 16x^2$

B. $9x^4 - 24x^3 + 16x^2$

C. $9x^3 - 16x$

D. $9x^3 - 24x^2 + 16x$

E. None of the above

6. Perform the indicated operations and express as a polynomial.

$$(2x^3 - 4x + 1) + 3(x^3 - 2x^2 + 3x - 5)$$

A. $5x^3 - 2x^2 - x - 4$

B. $5x^3 - 10x^2 + 9x - 14$

C. $5x^3 + 6x^2 - 13x + 16$

D. $5x^3 - 6x^2 + 5x - 14$

E. None of the above

7. Which of the following is a factor of $4x^6 - 7x^3 - 15$?

A. $4x^3 + 5$

B. $2x^3 - 3$

C. $x^3 - 5$

D. $4x^3 + 3$

E. None of the above are factors

8. Simplify.

$$\frac{2x^2+7x-15}{(x+2)^2}\cdot\frac{x^4-16}{2x^2-7x+6}$$

A. $(x+5)(x+4)$

B. $-\dfrac{5(x+2)^2}{2}$

C. $\dfrac{(x+5)(x^2+4)}{x+2}$

D. $(x+5)(x-2)$

E. None of the above

9. Perform the indicated operations and simplify.

$$\frac{5t}{t^2-16}-\frac{t}{t+4}$$

A. $\dfrac{9t-t^2}{(t+4)(t-4)}$

B. $4t$

C. $\dfrac{4t}{(t+4)(t-4)}$

D. $9t-t^2$

E. None of the above

10. Simplify.

$$\frac{\frac{b}{a}+\frac{a}{b}}{\frac{1}{b}}$$

A. b

B. $\dfrac{b+a}{a}$

C. $1+a$

D. $\dfrac{b^2+a^2}{a}$

E. None of the above

11. Solve the following equation for x. Choose the answer that best describes the solution.

$$\frac{3x-4}{24} = 1 + \frac{x}{4}$$

A. x is between -13 and -10

B. x is between -10 and -9

C. x is between -2 and -1

D. x is between -1 and 3

E. There is no solution for x

12. For what value of c is the number $x = 5$ a solution of the following equation?

$$2x-7+5c = 3c-4x-9$$

A. $c = -\frac{1}{10}$

B. $c = -16$

C. $c = -2$

D. $c = -\frac{13}{4}$

E. None of the above

13. Two hundred and fifty people attended a school play. Student tickets cost \$2 and nonstudent tickets cost \$3. The total amount of money collected was \$700. If x represents the number of student tickets sold, find the equation that would be used to solve for x. Do not solve the equation.

A. $2x-700 = 3x-250$

B. $2x + 3(700-x) = 250$

C. $700(2x + 3x) = 250$

D. $2x + 3x = 700$

E. $2x + 3(250-x) = 700$

14. Two people, who are 175 meters apart, start walking toward each other at the same time at constant rates of 1.7 m/sec. and 2.2 m/sec., respectively. After how many seconds will they meet? Round your answer to the nearest second.

A. 45 seconds

B. 47 seconds

C. 62 seconds

D. 99 seconds

E. None of the above

15. A couple went to a restaurant for dinner. A sales tax of 6% was added to their bill and they tipped the waiter 20% after the sales tax had been added. The couple ended up paying a total of $66.20. If x represents the amount of the pre-tax bill, find the equation that would be used to solve for x. Simplify the equation but do not solve.

A. $.26x = 66.20$

B. $1.272x = 66.20$

C. $1.072x = 66.20$

D. $1.26x = 66.20$

E. $.072x = 66.20$