

1. $-2^4 - 72 \div 6 \div 2 - 5(4 - 8y) =$

- a. $40y - 34$
- b. None of these
- c. $-40y - 42$
- d. $40y - 42$
- e. $40y - 60$

2. Fully simplify $\frac{\left(\frac{1}{4}\right)^{-23} + 2^{44}}{4^{24} - 8^{15}}$.

- a. 1
- b. $\frac{5}{14}$
- c. $\frac{1}{9}$
- d. $\frac{5}{6}$
- e. None of these

3. Perform polynomial long division on $(2x^4 - 3x^2 + x - 1) \div (x^3 + 3x^2)$. Identify the remainder and express it as a fraction of the divisor.

- a. None of these
- b. $\frac{-9x^2 + x - 1}{x^3 + 3x^2}$
- c. $\frac{19x^2 - 1}{x^3 + 3x^2}$
- d. $\frac{-21x^2 + x - 1}{x^3 + 3x^2}$
- e. $\frac{15x^2 + x - 1}{x^3 + 3x^2}$

4. Fully simplify $\frac{-(x+h+2)^{-1} + (x+2)^{-1}}{h}$.

- a. $\frac{1}{(x+h+2)(x+2)}$
- b. $\frac{(x+2)^{-1}(1-h)}{h}$
- c. None of these
- d. $\frac{h+4}{h(x+h+2)(x+2)}$
- e. 1

5. Fully simplify $\frac{5+7i}{3-2i}$.

- a. $\frac{19}{13} + \frac{31}{13}i$
- b. $\frac{1}{5} + \frac{31}{5}i$
- c. $\frac{1}{13} + \frac{31}{13}i$
- d. None of these
- e. $\frac{19}{5} + \frac{31}{5}i$

6. $i^{55} =$

- a. None of these
- b. $-i$
- c. 1
- d. i
- e. -1

7. Solve $\frac{1}{x} \geq \frac{5}{x-8}$ for x .

- a. $(-\infty, -2] \cup [0, 8]$
- b. $[-2, 0) \cup (8, \infty)$
- c. None of these
- d. $[-2, 0] \cup [8, \infty)$
- e. $(-\infty, -2] \cup (0, 8)$

8. What is the distance between the points $P(-5, -4)$ and $Q(2, -8)$?

- a. $\sqrt{193}$
- b. 11
- c. $\sqrt{65}$
- d. None of these
- e. $\sqrt{33}$

9. Given the circle $x^2 + 10x + y^2 - 4y = -13$, find its center C and domain.

- a. $C(5, -2)$, domain $[1, 9]$
- b. $C(-5, 2)$, domain $[-21, 11]$
- c. $C(5, -2)$, domain $[-2, 6]$
- d. $C(-5, 2)$, domain $[-9, -1]$
- e. None of these

10. Test $y^4 - y^2 - 8 = x^6 + x$ for symmetry about the x -axis, y -axis, and origin.

- a. Only x -axis symmetry
- b. Only y -axis symmetry
- c. No symmetries
- d. None of these
- e. Symmetric about the x -axis, y -axis, and origin

1. Fully simplify and give your final answer with all positive exponents: $\left(\frac{-3x^{-4}y^7z^5}{2x^{-6}y^{-2}z^4}\right)^{-2}$.

2. Rationalize the denominator and then fully simplify: $\frac{3}{5\sqrt[4]{8x^4y}}$.

3. Algebraically solve $4|-5-x| > x+20$ for x . Give your final answer in interval notation.

4. What is the equation, in standard form, of the circle of radius 9 and whose center is the midpoint of the line segment with endpoints $(3, 4)$ and $(7, -16)$?

5. Simplify; leave your final answer in factored form: $\frac{-x^2 + 12x - 35}{x^2 - 5x - 14} \div \frac{15x^2 - 75x}{3x^3 - 12x}$.

6. Find the slope-intercept equation of the line that passes through the point $(4, -2)$ and that is perpendicular to the line $2x - 4y = 7$.

7. Fully simplify; leave your final answer in factored form: $\frac{\frac{x}{x-3} + 2}{\frac{1}{x^2 - 9}}$.

8. Fully simplify: $\left|2 - \sqrt{-36}\right|$.

9. Find the x -intercept(s) and y -intercept(s) of $x^2 - x = y^4$.

x -intercept(s): _____, y -intercept(s): _____

10. Algebraically solve $\sqrt{x+6} - x = 4$ for x .