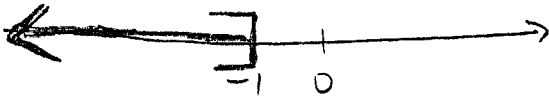


Show ALL your work to get full/partial credit. Each problem is worth 5 points.

1. Graph the set $\{x \mid x \leq -1\}$ and express in interval notation.



$$(-\infty, -1]$$

2. Simplify $3\sqrt{49-24} + |3-8| + 4 \cdot (-2)$

$$3\sqrt{25} + |-5| - 8$$

$$3(5) + 5 - 8$$

$$15 - 3$$

$$(12)$$

Clear parentheses and combine like terms.

3. $-2x(4-3x) + 7x^2 - 7x$

$$-8x + 6x^2 + 7x^2 - 7x$$

$$13x^2 - 15x$$

Given the polynomial: $-5x^5 + x + 3x^7 - 2$

4. What is the leading term?

$$3x^7$$

5. What is the degree?

$$7$$

Simplify and leave the answers only with positive exponents.

6. $\left(\frac{2x^{-2}y^7}{5x^3y^{-6}}\right)^{-3}$

$$\left[\frac{2x^{-5}y^{13}}{5}\right]$$

$$\frac{2^{-3}x^{15}y^{-39}}{5^{-3}}$$

$$= \frac{125x^{15}}{8y^{39}}$$

7. $\left(\frac{t^{10}}{t^{-2}}\right)^{1/2}$

$$= (t^{12})^{1/2} = t^6$$

8. Write the number in scientific notation: 513,000,000

$$5.13 \times 10^8$$

9. Multiply and simplify $3\sqrt{6x^6y^3} \cdot 2\sqrt{10xy^6}$

$$3\sqrt{60x^7y^9} = 12x^3y^4\sqrt{15xy}$$

10. Expand $(2m + 3n)^2$

$$4m^2 + 12mn + 9n^2$$

Completely factor the polynomials.

11. $4w^3 + 16w^2x + 16wx^2$

$$4w(w^2 + 4wx + 4x^2)$$

$$4w(w + 2x)^2$$

12. $9p^2 - 4q^2$

$$(3p + 2q)(3p - 2q)$$

Simplify.

13. $\frac{\frac{1}{5x} - \frac{3}{5}}{\frac{2}{x} + \frac{1}{5}} \cdot 5x$

$$\frac{1 - 3x}{10 + x}$$

14. $(a + b)(a - b)$

$$a^2 - b^2$$

15. Rationalize the denominator $\frac{13}{\sqrt{x}-1}$

$$\frac{13}{\sqrt{x}-1} \cdot \frac{\sqrt{x}+1}{\sqrt{x}+1} = \frac{13(\sqrt{x}+1)}{x-1}$$

16. Solve $4x + my = nx + 3$ for y .

$$my = nx + 3 - 4x \Rightarrow$$

$$y = \frac{x(n-4) + 3}{m}$$

$$2(5 - 6x) = 46$$

no restrictions

$$10 - 12x = 46$$

$$-12x = 36$$

$$x = -3$$

$$18. \left[\frac{9}{x} + \frac{5}{2} = \frac{5}{4} \right] \cdot 4x$$

$$x \neq 0$$

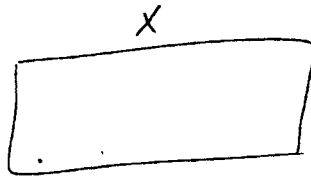
$$36 + 10x = 5x$$

$$5x = -36$$

$$x = -\frac{36}{5}$$

19. The plans for a rectangular deck call for the width to be 10 feet less than the length. Sam wants the deck to have an overall perimeter of 64 feet. What should the length of the deck be?

length : x
width : $x - 10$



$$P = 2l + 2w$$

$$64 = 2x + 2x - 20$$

$$64 = 4x - 20$$

$$84 = 4x$$

$$21 = x$$

What value of n makes the polynomial a perfect square trinomial? And factor the expression.

20. $y^2 - 10y + n$

$$y^2 - 10y + 25$$

$$(y - 5)^2$$

$$n = \left[\frac{1}{2}b \right]^2$$

$$n = \left[\frac{1}{2}(-10) \right]^2$$

$$n = (-5)^2$$

$$n = 25$$