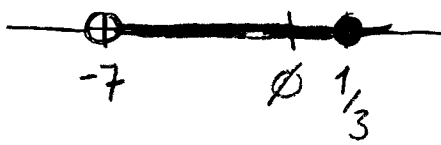
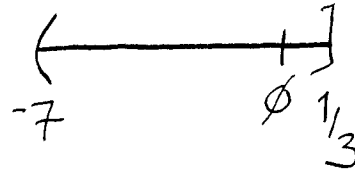


Show ALL your work to get full/partial credit. Each problem is worth 5 points

1. Graph the set $\{x \mid -7 < x \leq \frac{1}{3}\}$ and write in the corresponding interval notation.



OR



$$(-7, \frac{1}{3}]$$

Simplify

$$\begin{aligned} 2. \quad & 5 - 12(36 \div 2^2 \div 3) \\ & 5 - 12(36 \div 4 \div 3) \\ & 5 - 12(9 \div 3) \\ & 5 - 12(3) \\ & 5 - 36 \\ & \boxed{-31} \end{aligned}$$

$$3. \quad \sqrt{\frac{25}{9}} = \frac{\sqrt{25}}{\sqrt{9}} = \boxed{\frac{5}{3}}$$

$$\begin{aligned} 4. \quad & \text{Clear Parentheses and combine like terms: } 3x^2 - \left[8 + \frac{1}{2}(2x^2 - 6) - 4x^2 \right] \\ & 3x^2 - \left[8 + \frac{2x^2}{2} - \frac{6}{2} - 4x^2 \right] \\ & = 3x^2 - [x^2 - 4x^2 + 8 - 3] = 3x^2 - [-3x^2 + 5] \\ & = 3x^2 + 3x^2 - 5 = \boxed{6x^2 - 5} \end{aligned}$$

Simplify and write the answers with positive exponents only.

$$\begin{aligned} 5. \quad & 10^0 + 3^2 + \left(\frac{1}{9}\right)^{-1} \\ & = 1 + 9 + 9 \\ & = \boxed{19} \end{aligned}$$

$$\begin{aligned} 6. \quad & \frac{18x^{-7}y^7}{27x^{-3}y^{-1}} \\ & = \frac{18}{27} \cdot x^{-7 - (-3)} \cdot y^{7 - (-1)} \\ & = \frac{2}{3} \cdot x^{-4} y^8 = \boxed{\frac{2y^8}{3x^4}} \end{aligned}$$

Multiply and simplify the following expressions.

7. $\sqrt{12}\sqrt{3}$

$$= \sqrt{12 \cdot 3}$$

$$= \sqrt{36} = \boxed{6}$$

8. $\sqrt[4]{32x^4y^{12}}$

$$= (32x^4y^{12})^{1/4} = (2^5x^4y^{12})^{1/4}$$

$$= 2^{5/4}x^{4/4}y^{12/4} = 2^{1/4} \cdot 2^{4/4} \times y^3$$

$$= \boxed{2 \cdot \sqrt[4]{2} \times y^3}$$

Given the polynomial, $p(x) = -8x^3 + 7x - 3x^5$, identify the following

9. Degree of the polynomial

$$\boxed{5}$$

$$p(x) = -3x^5 - 8x^3 + 7x$$

10. The Leading term

$$\boxed{-3x^5}$$

11. Multiply $[2c + a][2c - a]$

Product of Conjugates

$$= ((2c)^2 - a^2) = \boxed{4c^2 - a^2}$$

Completely factor the following polynomials

12. $16x^2 - 49$

$$= (4x)^2 - 7^2$$

Difference of Squares

$$\boxed{(4x-7)(4x+7)}$$

13. $m^2 - 3n + 3m - mn$

$$= m^2 + 3m - 3n - mn$$

$$= m(m+3) - n(3+m)$$

$$= m(m+3) - n(m+3)$$

$$= \boxed{(m+3)(m-n)}$$

Simplify the following

14. $\frac{\frac{x-4}{4x}}{\frac{4-x}{3}}$ LCD: $4x$

$$= \frac{1}{3} \left(\frac{x^2}{4x} - \frac{16}{4x} \right)$$

$$= \frac{1}{3} \left(\frac{x^2 - 16}{4x} \right) = \frac{1}{12x} (x^2 - 4^2)$$

$$= \frac{1}{12x} (x-4)(x+4)$$

$$= \boxed{\frac{x^2 - 7y^2 + 3y - 16}{y^2(y+2)}}$$

15. $\frac{4}{y} + \frac{3}{y+2} - \frac{5}{y^2}$ LCD: $y^2(y+2)$

$$= \frac{4y(y+2) + 3y^2 - 5(y+2)}{y^2(y+2)}$$

$$= \frac{4y^2 + 8y + 3y^2 - 5y - 10}{y^2(y+2)}$$

16. Solve $\frac{11}{x^2+5x+4} = \frac{3}{x+4} + \frac{1}{x+1}$

17. Solve $3x + 2y = 6$ for y .

$$\frac{11}{(x+4)(x+1)} = \frac{3}{x+4} + \frac{1}{x+1} = \frac{3(x+1) + 1(x+4)}{(x+4)(x+1)}$$

$$\Rightarrow 2y = 6 - 3x$$

$$y = \frac{6 - 3x}{2}$$

$$= \left| 3 - \frac{3}{2}x \right|$$

$$\Rightarrow 11 = 3(x+1) + (x+4)$$

$$\Rightarrow 11 = 3x + 3 + x + 4 = 4x + 7$$

$$11 - 7 = 4 = 4x \Rightarrow \frac{4}{4} = \boxed{1 = x}$$

Henry needs to have a toilet repaired in his house. The cost of the new plumbing fixtures is \$120 and labor is \$40/hr.

18. Write the cost function, $C(x)$, representing the cost of repair for x hours.

$$C(x) = 40x + 120$$

19. After how many hours of labors would the cost of the repair job equal the cost of a new toilet of \$320?

$$320 = 40x + 120 \Rightarrow 320 - 120 = 200 = 40x$$

$$\Rightarrow \frac{200}{40} = 5 = x \Rightarrow \boxed{5 \text{ hours}}$$

20. In a jury pool, there are 8 more men than women. If the ration of men to women is 8 to 7, determine the number of men and women in the pool.

$$\# \text{ women} = w$$

$$\# \text{ men} = w + 8$$

OR

$$\# \text{ men} = m$$

$$\# \text{ women} = m - 8$$

$$\text{so, } \frac{w+8}{w} = \frac{8}{7}$$

$$\boxed{\begin{array}{l} 56 \text{ women} \\ 64 \text{ men} \end{array}}$$

$$\frac{m}{m-8} = \frac{8}{7}$$

$$\Rightarrow 7(w+8) = 8w$$

$$\Rightarrow 7m = 8(m-8)$$

$$\Rightarrow 7w + 56 = 8w$$

$$\Rightarrow 7m = 8m - 64$$

$$\Rightarrow 56 = 8w - 7w = w$$

$$\Rightarrow 7m - 8m = -64$$

$$\Rightarrow m = 64$$