

$$1. \quad 2|2x+4|-1=7$$

$$2|2x+4|=8$$

$$|2x+4|=4$$

$$2x+4=4$$

$$2x+4=-4$$

$$2x=0$$

$$2x=-8$$

$$x=0$$

$$x=-4$$

b

$$2. \quad |3n-24| \leq 9$$

$$-9 \leq 3n-24 \leq 9$$

$$15 \leq 3n \leq 33$$

$$5 \leq n \leq 11$$

d

3.

$$\left| \frac{x-2}{3} \right| + 1 > 5$$

$$\left| \frac{x-2}{3} \right| > 4$$

$$\frac{x-2}{3} > 4 \quad \text{or} \quad \frac{x-2}{3} < -4$$

$$x-2 > 12 \quad \text{or} \quad x-2 < -12$$

$$x > 14 \quad \text{or} \quad x < -10$$

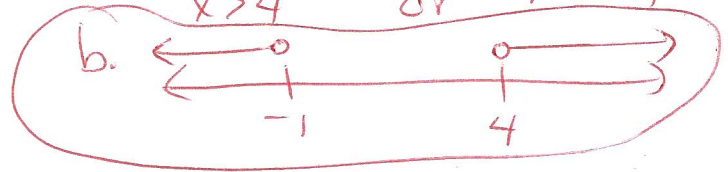
c

$$4. \quad |6x-9| > 15$$

$$6x-9 > 15 \quad \text{or} \quad 6x-9 < -15$$

$$6x > 24 \quad \text{or} \quad 6x < -6$$

$$x > 4 \quad \text{or} \quad x < -1$$



$$5. \quad \begin{cases} 2x+5y=26 \\ 6x-y=14 \end{cases}$$

$$2x+5y=26$$

$$30x-5y=70$$

$$32x=96$$

$$x=3$$

$$b: (3, 4)$$

$$2 \cdot 3 + 5y = 26$$

$$6 + 5y = 26$$

$$5y = 20$$

$$y = 4$$

$$6. \quad \begin{cases} 3x-2y=24 \\ -9x+6y=-18 \end{cases}$$

$$9x-6y=72$$

$$-9x+6y=-18$$

$$0 = 54$$

d. no solution

7

$$\begin{aligned} \textcircled{1} \quad & x + 3y - 2z = -9 \\ \textcircled{2} \quad & 6x - 4y + 3z = 29 \\ \textcircled{3} \quad & 2x + 2y + z = 13 \end{aligned}$$

$$\textcircled{2} \quad 6x - 4y + 3z = 29$$

$$\textcircled{3} \quad -6x - 6y - 3z = -39$$

$$\begin{aligned} -10y &= -10 \\ * y &= 1 \end{aligned}$$

a. $(2, 1, 7)$

$$\textcircled{1} \quad x + 3y - 2z = -9$$

$$\textcircled{3} \quad 4x + 4y + 2z = 26$$

$$* 5x + 7y = 17$$

$$5x + 7(1) = 17$$

$$5x = 10$$

$$x = 2$$

$$\textcircled{1} \quad 2 + 3(1) - 2z = -9$$

$$-2z = -14$$

$$z = 7$$

8

$$(2x^5 + x^3 + 6x + 4) + (x^4 - x^3 + 6x^2 - 3x)$$

a. $2x^5 + x^4 + 6x^2 + 3x + 4$

9

$$(2x - 5)(6x^2 + 8)$$

d. $12x^3 + 16x - 30x^2 - 40$

10

$$(9x^2 - 4x + 8)(3x^2 - 6x + 2)$$

$$27x^4 - 54x^3 + 18x^2 - 12x^3 + 24x^2 - 8x + 24x^2 - 48x + 16$$

a. $27x^4 - 66x^3 + 66x^2 - 56x + 16$

11

$$16x^2 - 121$$

b. $(4x + 11)(4x - 11)$

12

$$x^3 + 27$$

a. $(x + 3)(x^2 - 3x + 9)$

13

$$27x^3 - 64$$

a. $(3x - 4)(9x^2 + 12x + 16)$

14

$$18x^2 - 98$$

$$2(9x^2 - 49)$$

d. $2(3x + 7)(3x - 7)$

15. $16x^2 + 24x + 9$

$$(4x + 3)^2 = 5^2$$

d. $4x + 3 = 5$

$$16. (-4+3i) - (-6-i)$$

$$-4+3i+6+i$$

b. $2+4i$

$$17. (-7+8i) + (-1-3i)$$

a. $-8+5i$

$$18. (12i)(9i)$$

c. $108i^2$
 -108

$$19. (-5+3i)(2-6i)$$

$$-10 + 30i + 6i - 18i^2$$

$$-10 + 36i + 18$$

a. $8+36i$

$$20. \frac{6}{4+2i} \frac{(4-2i)}{(4-2i)} = \frac{24-12i}{16-4i^2} =$$

$$= \frac{24-12i}{16+4}$$

$$= \frac{24-12i}{20}$$

d. $\frac{6-3i}{5}$

$$21. (\sqrt{-100})^2 = -100$$

a.

$$22. \frac{6+\sqrt{-16}}{2+\sqrt{-4}} = \frac{6+4i}{2+2i} \frac{(2-2i)}{(2-2i)}$$

$$= \frac{12-12i+8i-8i^2}{4-4i^2}$$

$$= \frac{12-4i+8}{4+4} = \frac{20-4i}{8} = \frac{5-i}{2} = d$$

$$23. \frac{x^2-x-12}{x^2-16}$$

$$\frac{(x-4)(x+3)}{(x-4)(x+4)}$$

a. $\frac{x+3}{x+4}$

$$24. \frac{2x-10}{x^2-3x-10} \cdot \frac{x^2-4}{8x-16}$$

$$\frac{2(x-5)}{(x-5)(x+2)} \cdot \frac{(x+2)(x-2)}{4 \cdot 8(x-2)}$$

d. $\frac{1}{4}$

$$25. \frac{4x+20}{x^2-1} \div \frac{2x+10}{x^2+4x-5}$$

$$\frac{24(x+5)}{(x-1)(x+1)} \cdot \frac{(x+5)(x-1)}{2(x+5)}$$

b. $\frac{2(x+5)}{x+1}$

$$26. \frac{8}{3x+6} + \frac{6x}{x^2+x-2}$$

$$\frac{8}{3(x+2)} + \frac{6x}{(x+2)(x-1)}$$

$$\frac{8(x-1) + 6x \cdot 3}{3(x+2)(x-1)}$$

$$\frac{8x-8+18x}{3(x+2)(x-1)}$$

$$\textcircled{a} \frac{26x-8}{3(x+2)(x-1)} \text{ or } \frac{26x-8}{3x^2+3x-6}$$

$$27. \frac{x}{3x-3} - \frac{x+1}{x^2-1}$$

$$\frac{x}{3(x-1)} - \frac{x+1}{(x+1)(x-1)}$$

$$\frac{x(x+1) - (x+1)3}{3(x-1)(x+1)}$$

$$\frac{x^2+x-3x-3}{3(x-1)(x+1)}$$

$$\frac{x^2-2x-3}{3(x-1)(x+1)}$$

$$\frac{(x-3)(x+1)}{3(x-1)(x+1)}$$

$$\textcircled{b} \frac{x-3}{3(x-1)} \text{ or } \frac{x-3}{3x-3}$$

$$28. \frac{5x^{-2}y^6z}{15x^3y^4z^{-2}}$$

$$\frac{1}{3} \frac{x^{-2-3} y^{6-4} z^{1-(-2)}}{1}$$

$$\frac{x^{-5} y^2 z^3}{3} =$$

$$\textcircled{a} \frac{y^2 z^3}{3x^5}$$

$$29. \frac{(2a^2b^{-2})^3}{4b^3c^{-8}}$$

$$\frac{8a^6b^{-6}}{4b^3c^{-8}} = 2a^6b^{-6-3}c^8$$

$$= 2a^6b^{-9}c^8$$

$$\textcircled{d} \frac{2a^6c^8}{b^9}$$

$$30. \frac{6x+18}{4x-8} \cdot \frac{3x-2}{x+3}$$

$$3 \frac{\cancel{6}(x+3)}{4(x-2)} \cdot \frac{3x-2}{\cancel{x+3}}$$

$$\frac{3(3x-2)}{2(x-2)} \text{ or } \textcircled{c} \frac{9x-6}{2x-4}$$

$$\frac{9x-6}{2x-4}$$

$$31. \frac{1}{x+3} + \frac{x}{x+4}$$

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

$$\frac{x+4 + x^2 + 3x}{(x+3)(x+4)}$$

$$\frac{x^2 + 4x + 4}{(x+3)(x+4)}$$

$$\text{or } \frac{x^2 + 4x + 4}{x^2 + 7x + 12}$$

$$32. \frac{8x^3}{3y} \div \frac{9y^{-2}}{6x^2}$$

$$\frac{8x^3}{3y} \cdot \frac{6x^2}{9y^{-2}}$$

$$\frac{8x^3}{3y} \cdot \frac{16x^2 y^2}{9}$$

$$\text{c } \frac{16x^5 y}{9}$$

33.

$$(5, -1) \text{ see picture}$$

b

$$34. m = \frac{4}{9} \rightarrow$$

$$b = -8$$

$$y = 2x - 8$$

$$y \leq 2x - 8 \rightarrow$$

$$y > -2x + 8$$

$$m = -1$$

$$b = 6$$

$$y = -x + 6$$

c

$$y > -x + 6$$

$$35. b = 4$$

$$m = -2$$

$$y = -2x + 4$$

$$y < -2x + 4$$

$$m = \frac{1}{2}$$

$$b = 1$$

$$y = \frac{1}{2}x - 1$$

$$y > \frac{1}{2}x - 1$$

d

$$36. \sqrt{64} + \sqrt[4]{81}$$

$$8 + 3 = 11 \text{ a}$$

$$37. (a^2)^3 \cdot a^3$$

$$a^6 \cdot a^3 = a^9 \text{ b}$$

$$38. \frac{(2p)^{-2} pq}{40 \cdot 3pq^2} = \frac{pq}{1 \cdot 3pq^2 \cdot (2p)^2}$$

$$\frac{pq}{3pq^2 \cdot 4p^2} = \frac{pq}{12p^3q^2} = \frac{1}{12p^2q} \text{ c}$$

