

1.  $|-3z - 4| = 4$ , so

$$\begin{array}{lll} -3z - 4 = 4 & \text{or} & -3z - 4 = -4 \\ -3z = 4 + 4 & & -3z = -4 + 4 \\ -3z = 8 & & -3z = 0 \\ \frac{-3z}{-3} = \frac{8}{-3} & & z = 0 \end{array}$$

Hence the solutions are:  $z = -\frac{8}{3}$  and  $z = 0$

2.

$$\begin{aligned} y^{-2}y^0 \div x^{-1} \times x^{-1}y^{-3}x^{-3} &= y^{-2}y^0 \times x^1 \times x^{-1}y^{-3}x^{-3} \\ &= x^1x^{-1}x^{-3}y^{-2}y^0y^{-3} \\ &= x^{1-1-3}y^{-2+0-3} \\ &= x^{-3}y^{-5} \end{aligned}$$

3.

$$\begin{aligned} x^{-1}x^{-3}y^3 \div (x^1x^{-1}) \times y^1 &= x^{-1}x^{-3}y^3 \times x^{-1}x^1 \times y^1 \\ &= x^{-1}x^{-3}x^{-1}x^1y^3y^1 \\ &= x^{-1-3-1+1}y^{3+1} \\ &= x^{-4}y^4 \end{aligned}$$

4.

$$\begin{aligned} y^{-1}y^{-1}y^2x^{-2} \div y^{-3} \times x^2 &= y^{-1}y^{-1}y^2x^{-2} \times y^3 \times x^2 \\ &= x^{-2}x^2y^{-1}y^{-1}y^2y^3 \\ &= x^{-2+2}y^{-1-1+2+3} \\ &= x^0y^3 \\ &= y^3 \end{aligned}$$

5.  $\frac{5y^{-5}y^0}{y^{-5}y^{-5}} = \frac{5y^{-5+0}}{y^{-5-5}} = \frac{5y^{-5}}{y^{-10}} = 5y^{-5-(-10)} = 5y^5$

6.  $\sqrt{18} = x\sqrt{2}$ . Now  $\sqrt{18} = \sqrt{9 \times 2} = \sqrt{3 \times 3 \times 2} = 3\sqrt{2}$ . Hence  $x = 3$

7.

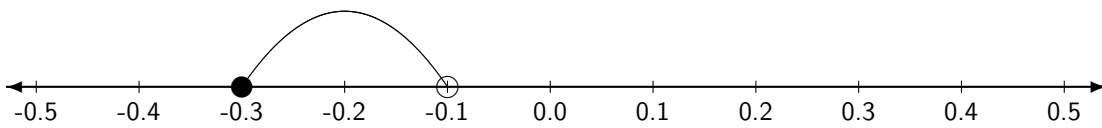
$$\begin{aligned} \sqrt{8}(\sqrt{4} + \sqrt{6}) &= \sqrt{8} \times \sqrt{4} + \sqrt{8} \times \sqrt{6} \\ &= \sqrt{8 \times 4} + \sqrt{8 \times 6} \\ &= \sqrt{32} + \sqrt{48} \\ &= 4\sqrt{2} + 4\sqrt{3} \end{aligned}$$

8.

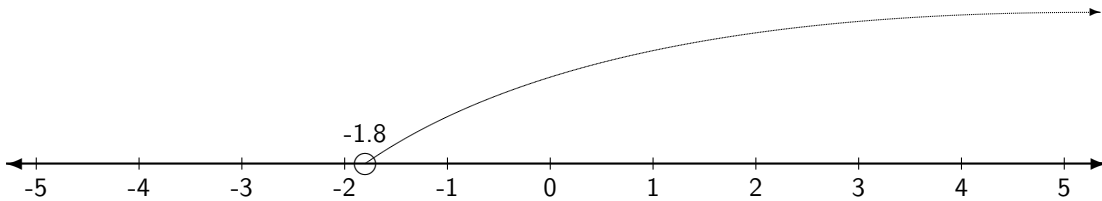
$$\begin{aligned}(\sqrt{9} + \sqrt{6})(\sqrt{6} + \sqrt{6}) &= \sqrt{9} \times \sqrt{6} + \sqrt{9} \times \sqrt{6} + \sqrt{6} \times \sqrt{6} + \sqrt{6} \times \sqrt{6} \\ &= \sqrt{9 \times 6} + \sqrt{9 \times 6} + \sqrt{6 \times 6} + \sqrt{6 \times 6} \\ &= \sqrt{54} + \sqrt{54} + 6 + 6 \\ &= 3\sqrt{6} + 3\sqrt{6} + 6 + 6 \\ &= 6 + 6 + 3\sqrt{6} + 3\sqrt{6} \\ &= 12 + 6\sqrt{6}\end{aligned}$$

9.  $-|3 + 30| = -|33| = -33$

10. In interval form the answer is  $[-0.3, -0.1)$  and on a real line the answer is:



11. In inequality form the answer is  $x > -1.8$  and on a real line the answer is:



12.

$$\begin{aligned}2x - 4 &> x - 5 \\ 2x - 4 + 4 &> x - 5 + 4 \\ 2x &> x - 1 \\ 2x - x &> x - x - 1 \\ x &> -1\end{aligned}$$

In interval format the answer is  $(-1, \infty)$ , and on a real line the answer is:

