

Solve.

1) $x(x - 2) < (x - 1)(x - 4)$

2) $x + 2 < 18x - 6$

3) $4y - 4 + y \leq 7 - 7y - 3$

4) $2x - 2 + 3x \geq 1 - 12x - 5$

5) $-\frac{6}{7}x \geq -\frac{4}{7} + \frac{5}{6}x$

Solve. Write interval notation.

6) $-2 < -2x \leq 6$

7) $5 < \frac{9x - 14}{12} < 13$

8) $16 < 4x + 4 \leq 32$

9) $-6x + 1 \geq 13$ or $3x + 3 \geq -9$

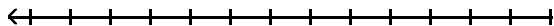
10) $3x + 13 \leq -21$ or $3x + 13 \geq 21$

$$11) 5x - 10 < -4 \text{ or } 5x - 10 > 4$$

$$15) 8x - 16 - x^2 < 0$$

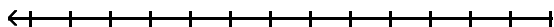
Solve the inequality and graph the solution set.

$$12) |r + 3| > 2$$



$$16) \frac{x+7}{x+3} < 3$$

$$13) \left| \frac{k+3}{3} \right| < 1$$



$$17) \frac{1}{x+7} > 0$$

$$18) \frac{2}{x^2+1} \geq \frac{4}{4x^2+3}$$

Solve.

$$14) x^2 - 8x + 15 > 0$$

$$19) \frac{4x}{7x-2} > \frac{x}{x+1}$$

Find an equation of variation for the given situation.

20) y varies directly as z , and $y = 30$ when $z = 210$.

21) y varies directly as z , and $y = 47$ when $z = 329$.

22) y varies inversely as x and $y = 50$ when $x = \frac{1}{10}$

23) y varies inversely as x and $y = 21$ when $x = \frac{1}{3}$

Solve.

24) According to Ohm's law, the electric current I , in amperes, in a circuit varies directly as the voltage V . When 20 volts are applied, the current is 5 amperes. What is the current when 10 volts are applied?

Solve the problem.

25) The amount of tread left on a tire varies inversely as the number of miles the tire has traveled. A tire that has traveled 90,000 mi has $\frac{1}{2}$ in. of tread left. How much tread will be left on a tire that has traveled 24,000 mi?

Find an equation of variation for the given situation.

26) y varies directly as the square root of x , and $y = 2.5$ when $x = 100$.

27) y varies inversely as x , and $y = 5$ when $x = 2$

28) y varies jointly as x and z , and $y = 81.42$ when $x = 5.9$ and $z = 6$

29) y varies directly as x and inversely as z , and $y = 10$ when $x = 2$ and $z = 7$.

Solve the problem.

30) At a fixed temperature, the resistance R of a wire varies directly as the length l and inversely as the square of its diameter d . If the resistance is 0.84 ohm when the diameter is 1 mm and the length is 210 cm, what is the resistance when the diameter is 3 mm and the length is 1880 cm?

Answer Key

Testname: 1.5-1.6

1) $(-\infty, \frac{4}{3})$

2) $(\frac{8}{17}, \infty)$

3) $(-\infty, \frac{2}{3}]$

4) $[-\frac{2}{17}, \infty)$

5) $(-\infty, \frac{142}{147}]$

6) $[-3, 1)$

7) $(\frac{74}{9}, \frac{170}{9})$

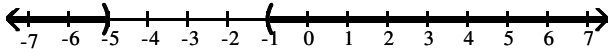
8) $(3, 7]$

9) $(-\infty, \infty)$

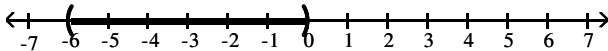
10) $(-\infty, -\frac{34}{3}] \cup [\frac{8}{3}, \infty)$

11) $(-\infty, 1.2) \cup (2.8, \infty)$

12)



13)



14) $(-\infty, 3) \cup (5, \infty)$

15) $(-\infty, 4) \cup (4, \infty)$

16) $(-\infty, -3) \cup (-1, \infty)$

17) $(-7, \infty)$

18) $(-\infty, \infty)$

19) $(-1, 0) \cup (\frac{2}{7}, 2)$

20) $y = \frac{1}{7}z$

21) $y = \frac{1}{7}z$

22) $y = \frac{5}{x}$

23) $y = \frac{7}{x}$

24) 2.5 amperes

25) $\frac{15}{8}$ in.

26) $y = 0.25\sqrt{x}$

27) $y = \frac{10}{x}$

28) $y = 2.3xz$

29) $y = \frac{35x}{z}$

30) 0.836 ohm