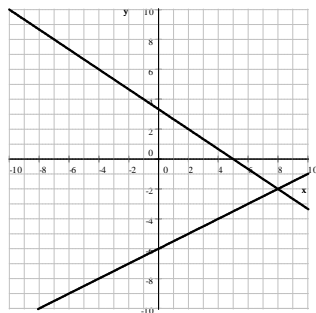


Review Problems

- Simplify each of the following compound inequalities.
 - $x > 3$ and $x > 10$
 - $x > 3$ or $x > 10$
 - $6 > x$ and $x \geq -1$
 - $6 > x$ or $x \geq -1$
- Factor by completing the square.
 - $x^2 - 6x - 216$
 - $2a^3 - 4a^2 - 6a$
 - $-50m - 30m^2 - 5m^3$
 - $4m - m^2 - 3$
- Simplify each of the following.
 - $\frac{(-2x^3y)^4 (2xyx^2)^3}{(-4x^2y)^4}$
 - $\left(\frac{-4a^3b^5}{8a^3b^4}\right)^4 (-2ab^3a)^2$
 - $\frac{2a^2 - 24a + 70}{2a^2 - 50}$
 - $\frac{3x - 15}{5 - x}$
 - $\frac{2x^2 - 2x}{5x^2 - 5} \cdot \frac{x^2 - 2x - 3}{x^3 + x^2}$
 - $\frac{1}{a} - \frac{2a}{3}$
 - $\frac{1}{2x - 1} - \frac{3}{x}$
 - $(\sqrt{5} - 2)^3$
- Rationalize the denominator in each of the following.
 - $\frac{12}{\sqrt{7} - 4}$
 - $\frac{\sqrt{3} - 2}{\sqrt{3} - 1}$
 - $\frac{\sqrt{x}}{\sqrt{x} - 3}$
- Simplify $-2x^2 - x + 2$ if $x = -3\sqrt{2} + 1$
- Graph the lines $2x + 3y = 10$ and $y = \frac{1}{2}x - 6$ in the same coordinate system. Use your graph to find the coordinates of the point where the lines intersect each other.
- Solve each of the following equations.
 - $x^2 - 4x = 96$
 - $\frac{2}{3}(x - 1) - \frac{3x - 1}{4} = -\frac{x - 5}{2}$
 - $(2x - 1)^2 - (x - 3)^2 = 10x - x^2 - 8$
 - $3m^4 = 3m^2$
- The sum of three consecutive numbers is 42. Find these numbers.
- We open a book and find that the two page numbers we see add up to 241. What are these page numbers?
- One number is twelve less than twice another. Find these numbers if their sum is 33.
- One number is twelve less than twice another. Find these numbers if their product is 320.
- One side of a rectangle is 8 centimeters longer than twice another side. Find the sides of the rectangle if its perimeter is 94 cm.
- One side of a rectangle is 8 centimeters longer than twice another side. Find the sides of the rectangle if its area is 120 cm^2 .

Review Problems - Answers

1. a) inequality notation: $x > 10$ interval notation: $(10, \infty)$
 b) inequality notation: $x > 3$ interval notation: $(3, \infty)$
 c) This compound inequality can not be simplified but the notation can be:
 inequality notation: $-1 \leq x < 6$ interval notation: $[-1, 6)$
 d) \mathbb{R} (all real numbers) interval notation: $(-\infty, \infty)$
2. a) $(x + 12)(x - 18)$ b) $2a(a + 1)(a - 3)$ c) $-5m(m^2 + 6m + 10)$ d) $-(m - 1)(m - 3)$
3. a) $\frac{1}{2}x^{13}y^3$ b) $\frac{1}{4}a^4b^{10}$ c) $\frac{a - 7}{a + 5}$ d) -3 e) $\frac{2(x - 3)}{5x(x + 1)}$ f) $\frac{-2a^2 + 3}{3a}$ g) $\frac{-5x + 3}{x(2x - 1)}$
 h) $17\sqrt{5} - 38$
4. a) $\frac{-4\sqrt{7} - 16}{3}$ b) $\frac{1 - \sqrt{3}}{2}$ c) $\frac{\sqrt{x}(\sqrt{x} + 3)}{x - 9}$
5. $39 - 9\sqrt{2}$
6. $(8, -2)$



7. a) $-8, 12$ b) 7 c) $0, 2$ d) $-1, 0, 1$
8. $13, 14, 15$
9. 120 and 121
10. 15 and 18
11. there are two solutions: 16 with 18 and -10 with -32
12. 13 cm by 34 cm
13. 6 cm by 20 cm