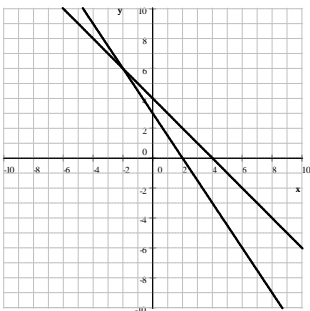


- Simplify each of the following expressions. Show all work.
 - $\sqrt{45} - \sqrt{20} + \sqrt{500}$
 - $\frac{a^2 - 8a + 16}{a} \cdot \frac{a^3}{4 - a}$
 - $\frac{\sqrt{75}}{\sqrt{12}}$
 - $\frac{2x^2 - 98}{x^2 - 6x - 7} \div \frac{21 + 3x}{6x^2 - 6}$
 - $(\sqrt{7} - 2)^2$
 - $\frac{x^2 - 3x}{x^2 + 4x - 21} \cdot \frac{6x + x^2 - 7}{x^2 - x}$
 - $(2\sqrt{5} - 1)(2\sqrt{5} + 1)$
 - $(3 - \sqrt{5})^2 - (3 + \sqrt{5})^2$
 - $\frac{(-2xy^2)^3(-x^3y^4)^2}{(-xy^2)^4}$
- Rationalize $\frac{\sqrt{3} - 1}{\sqrt{3} + 1}$
 - Simplify $x^2 - x - 1$ if $x = -2\sqrt{5} + 3$.
- Completely factor each of the following expressions.
 - $24a^3 - 315a^2 + 3a^4$
 - $3a^6b - 243a^2b$
 - $2x^4y^3 - 32y^3$
- Solve each of the following equations. Make sure to check your solution.
 - $x^3 = 12x^2 + 3213x$
 - $2(x - 3) - \frac{x}{2} = \frac{3}{2}(x - 4)$
 - $x^3 - 2x^2 - 35x = 0$
 - $2x^2 - 32x = 0$
 - $2(x - 3) - 5(4x + 3) = 2x - 1$
 - $\frac{3x - 4}{5} - \frac{x - 4}{2} = \frac{2x + 4}{10}$
 - $2(x - 3)^2 - 3(x - 1)^2 = 3 - (x + 2)^2$
 - $|2x - 8| + 3 = 17$
 - $|2x - 5| + 17 = 3$
 - $\frac{1}{2}|x - 5| - 3 = 8$
 - $2|3x - 1| + 3 = 11$
- Graph the straight lines determined by the equations $3x + 2y = 6$ and $x + y = 4$. Use your graph to find the coordinates of the point where the lines intersect.
- Solve each of the following formulas.
 - $PV = nRT$ for T
 - $A = \frac{1}{2}h(B + b)$ for h
 - $2x + 3y = 12$ for y
- There is a farm where chickens and cows live. The number of cows is two less than twice the number of chickens. All together, these animals have 262 legs. How many chickens, how many cows?
- The sum of two numbers is 27. Their difference is 11. Find these numbers.
- One number is twenty greater than five times another number. Find these numbers if their sum is 8.
 - One number is twenty greater than five times another number. Find these numbers if their product is 300.
- The sum of a number and thirty-five is two greater than twice the opposite of the number. Find this number.

Answers

1. a) $11\sqrt{5}$ b) $-a^2(a-4)$ c) $\frac{5}{2}$ d) $4x-4$ e) $11-4\sqrt{7}$ f) 1 g) 19 h) $-12\sqrt{5}$
 i) $-8x^5y^6$
2. a) $2-\sqrt{3}$ b) $25-10\sqrt{5}$
3. a) $3a^2(a+15)(a-7)$ b) $3a^2b(a^2+9)(a-3)(a+3)$ c) $2y^3(x-2)(x+2)(x^2+4)$
4. a) 63, 0, -51 b) identity c) 7, 0, -5 d) 0, 16 e) -1 f) 8 g) 8 h) -3, 11
 i) no solution j) -17, 27 k) $-1, \frac{5}{3}$
5. (-2, 6)



6. a) $T = \frac{PV}{nR}$ b) $h = \frac{2A}{B+b}$ c) $y = -\frac{2}{3}x + 4$
7. 27 chickens and 52 cows
8. 8 and 19
9. a) -2 and 10 b) 6 with 50 and -10 with -30
10. -11