1) Natalie made a nut mixture that contains 48% peanuts by mixing together 19.6 kg of mixed nuts that contain 60% peanuts and 8.4 kg of a different brand of mixed nuts. The second brand of mixed nuts contained what percent peanuts?

2) A metallurgist needs to make 9.2 kg of an alloy containing 40% copper. He is going to melt and combine one metal that is 10% copper with another metal that is 70% copper. How much of each should he use?

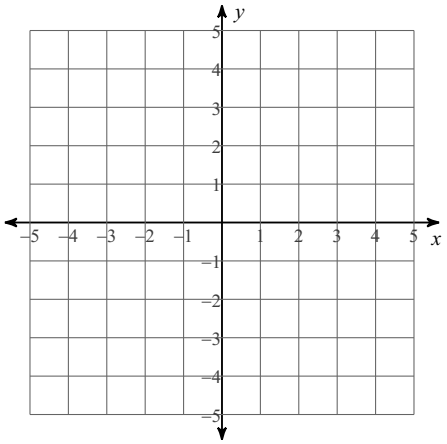
Write the slope-intercept form of the equation of the line through the given points.

3) through: $(-2, -5)$ and $(2, -3)$

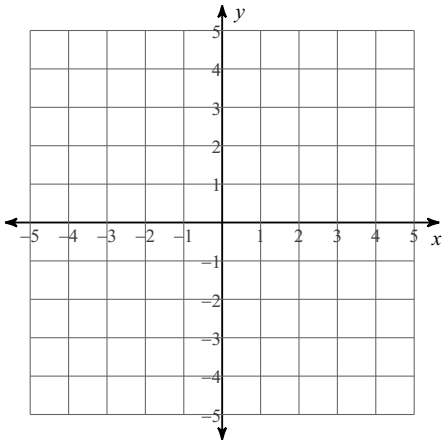
4) through: $(4, 3)$ and $(-4, -3)$

Sketch the solution to each system of inequalities.

5) $x + 3y < 6$
$4x - 3y \leq 9$



6) $x + 3y \geq -9$
$5x - 3y > -9$



7) Rob and Perry are selling wrapping paper for a school fundraiser. Customers can buy rolls of plain wrapping paper and rolls of shiny wrapping paper. Rob sold 3 rolls of plain wrapping paper and 12 rolls of shiny wrapping paper for a total of \$199.80. Perry sold 17 rolls of plain wrapping paper and 9 rolls of shiny wrapping paper for a total of \$254.87. What is the cost each of one roll of plain wrapping paper and one roll of shiny wrapping paper?

8) Bill and Kristin each improved their yards by planting daylilies and ornamental grass. They bought their supplies from the same store. Bill spent \$173.90 on 8 daylilies and 7 bunches of ornamental grass. Kristin spent \$128.10 on 3 daylilies and 8 bunches of ornamental grass. What is the cost of one daylily and the cost of one bunch of ornamental grass?

Simplify.

9) $3\sqrt{20} - 9\sqrt{20}$

10) $-\sqrt{432} - 10\sqrt{768}$

11) $-10\sqrt{18} - 2\sqrt{32}$

12) $-3\sqrt{8} + 9\sqrt{128}$

13) $\sqrt{42} \cdot \sqrt{24}$

14) $8\sqrt{36} \cdot 6\sqrt{10}$

15) $\sqrt{48} \cdot \sqrt{6}$

16) $-2\sqrt{30} \cdot \sqrt{30}$

Simplify. Your answer should contain only positive exponents.

17) $\dfrac{(2y^3)^4}{x^4 \cdot xy^{-4}}$

18) $\dfrac{(y^{-2})^0}{yx^3 \cdot 2x^3}$

19) $\dfrac{2x^0y^4}{2x^{-3}y^{-1} \cdot (2x^{-3}y^{-3})^2}$

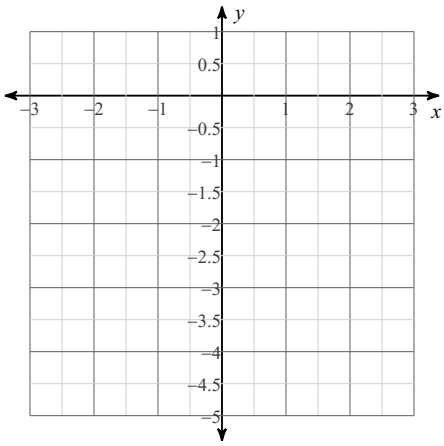
20) $\dfrac{x^{-2} \cdot 2yx^{-1}}{(xy^4)^{-2}}$

21) $\left(\dfrac{2u^{-1}v^4 \cdot u^4v^2}{u^3}\right)^{-3}$

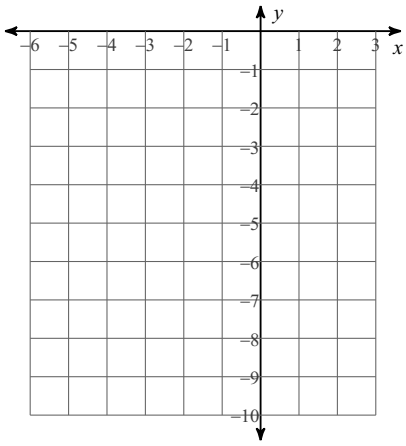
22) $\dfrac{a^2b^3}{(2a^{-2}b^{-4} \cdot ba^{-3})^2}$

Sketch the graph of each function.

23) $f(x) = x^2 - 2x - 3$



24) $f(x) = -2x^2 - 16x - 33$



Solve each equation by factoring.

25) $6b^2 - 44b = -48$

26) $7x^2 = -16 + 58x$

27) $9n^2 + 84n = -96$

28) $2r^2 - 42 = -5r$

29) $15x^2 = 27 + 36x$

30) $15b^2 + 102b = 144$