

Show all your work if you want to receive credit.

(1) Solve each of the following inequalities. Write your answers in interval notation.

(a) $-1 \leq 2x + 3 < 14$

(b) $3x + 2 < 8$ or $2x \leq 3 < 11$

(2) Solve each of the following. Use interval notation where appropriate.

(a) $|2x - 3| = 7$

(b) $|2x - 3| > 1$

(c) $|2x - 3| = -2$

(d) $|2x - 3| > -1$

(3) Completely factor each of the following

(a) $4x^2 - 36$

(b) $4x^3 - 9x + 12x^2$

(c) $8x^3 - 27y^3$

(d) $x^2 - 10x + 25 - 36y^2$

(4) Completely simplify the following

(a) $\frac{m^2 - n^2}{2x^2 + 3x - 2} \cdot \frac{2x^2 + 5x - 3}{n^2 - m^2}$

(b) $\frac{x^2 y^2}{x^1 y^3} \div \frac{x^3 y^4}{x^2 y^5}$

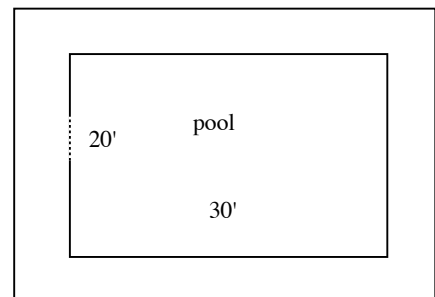
(5) Find the equation of the line through the points $(-8, 3)$ and $(2, 1)$. Write the answer in general form.(6) Find the equation of the line through the points $(-8, 3)$ and $(-8, 1)$. Write the answer in general form.(7) Find the equation of the line through the points $(-8, 3)$ and $(2, 3)$. Write the answer in general form.

Solve each of the following using algebra.

(8) The value of a car usually varies inversely with its age. If a car is worth \$7500 when it is 3 years old, how much is it worth when it is 8 years old?

(9) A car CD player has an operating temperature of $|t - 40| \leq 80$, where t is a temperature in degrees Fahrenheit. Solve the inequality and express the range of temperatures in interval notation.

(10) A woman wants to enclose a swimming pool with a fence. There should be a walkway of uniform width around the pool. If the woman uses 360 feet of fencing, how wide is the walkway?



(11) A tire company manufactures premium tires, receiving \$130 for each tire it makes. If the manufacturer has fixed costs of \$15,512.50 per month and variable costs of \$93.50 for each tire

manufactured, how many tires must the manufacturer sell for revenue to equal cost?

(12) Sketch the graph of each of the following

(a) $3x + 8y = 24$

(b) $x = -3$