Sample of Material from MAT092 at Broome Community College

This material is for sample purposes only and is not to be considered as an official listing of topics.

1. Factor the following expressions as much as nicely possible. If no nice factoring can be done, then say so.

a) $5x - 30$ b) $8x^2 + 14x$ c) $x^2 - x - 30$

d) $x^2 - 25$ e) $x^2 + 36$ f) $2x^2 + 11x + 15$

g) $6x^3 - 24x$

2. Perform the following operations. Combine like terms. Show work for partial credit on wrong answers.

a) $3x^2(2x + 4)$ b) $(2x^2 - 4x + 5) + (3x^2 + 4x - 5)$

c) $(3 - x^2) - (x^2 - 7x + 11)$ d) $(x - 5)(x + 3)$

e) $(2x - 1)(x + 4)$ f) $(2x + 1)(2x - 1)$

g) $(3x^3)^2 (x^4)$ h) $(x^2y)^{-1}(x^3y^2)^5$

i) $\frac{x^5y^2}{x^3y}$ (on one line) j) $\frac{2x^{-1}y^3}{10x^5y^{-4}}$ (all positive exponents)

3. Solve the following equations:

a) $(x - 5)(x + 3) = 0$ b) $x^2 - 9x - 10 = 0$

c) $\frac{x-1}{10} = \frac{x+4}{5}$ d) $3x + 2y = 11$; for y

e) $s = -16t^2 + vt$; for v

4. Factor and simplify.

a) $\frac{3x^2 - 6x - 24}{6x + 12}$ b) $\frac{x^2 + 2x - 3}{2x^2 + 7x + 3} \times \frac{2x^2 + 3x + 1}{x^2 - 3x - 4}$

5. Combine.

a) $\frac{-6x}{x+2} + \frac{4x}{x+2}$ b) $\frac{x^2 - 6x}{3x - 10} - \frac{4x - 11}{3x - 10}$

6. Calvin wants to mix 1.5 pounds of Good & Plenty candy with some Jolly Rancher candies to put into bowls for his party. If the Good & Plenty candy costs $4.89/lb and the Jolly Ranchers candy costs $2.39/lb, how many pounds of Jolly Rancher candy should he buy to spend $2.89/lb for the mix?

7. Loretta and Alvin want to check out the range on their walkie-talkie radios and decide to walk in opposite directions. Loretta walks at 2 miles per hour, and Alvin walks at 2.3 miles per hour. How long until they are 2 miles apart?

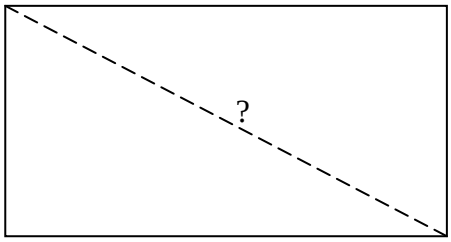
8. Evaluate $\sqrt{360}$ on your calculator (accurate to 4 decimal places).

9. Simplify and leave in radical form.

a) $4\sqrt{12} - 2\sqrt{3}$ b) $\sqrt{75x} - \sqrt{27x} + \sqrt{6x}$

c) $\sqrt{3x^3y^2}\sqrt{12xy^6}$ d) $\dfrac{\sqrt{10a^4b^3c}}{\sqrt{45abc}}$

10. A rectangular sheet of plywood is 8 feet wide and 4 feet tall. To two decimal places, haw far is it between opposing corners?



11. Solve the following for x.

a) $2x^2 - x - 1 = 0$ (by factoring)

b) $x^2 = 25$ c) $x^2 - 6x + 3 = 0$ (by quadratic formula)

12. Solve and draw the solution on a number line.

a) $3x + 8 \leq 21$ b) $-8x < 16$ c) $4(x - 5) > 2x + 6$

13. Sketch: a) $x + y > -2$ b) $-4x + 5y \leq 20$

14. Graphically solve the equations shown, or graph and explain why no solution exists.

a) $x + 4y = 4$
$2x + 4y = 4$

b) $y = 2x + 1$
$2x - y = 3$

15. A baker purchased 12 lb of wheat flour and 15 lb of rye flour for a total cost of $18.30. A second purchase at the same prices included 15 lb of wheat flour and 10 lb of rye flour for a cost of $16.75. Find the cost per pound of wheat flour and rye flour. (Set up two equations, then solve those equations using one of the three methods in class

16. Draw the following lines: a) $x + 2y = -2$ b) $-4x - 3y = 12$

17. Sketch $y = x^2 - 2x - 3$. Show the coordinates of at least 5 points, including the vertex.

18. Find the perimeter for the following shapes.