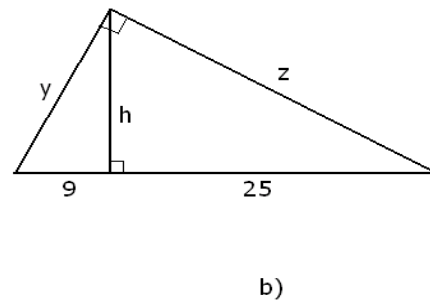
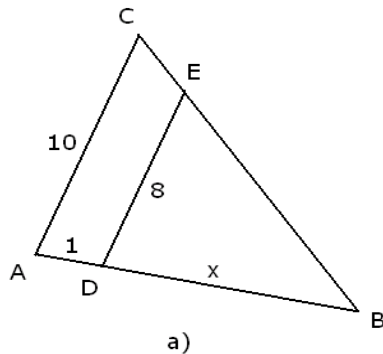


Review Problems

- Completely factor each of the following.
 - $4a + 4a^5$
 - $4a^5 - 4a$
 - $a^5 + a^4$
- Factor completely by completing the square or state if the expression does not factor.
 - $x + 2x^2 - 15$
 - $2x + x^2 + 26$
 - $12x - 2x^2 - 4$
 - $4x^2 - 24x - 64$
 - $6x^2 - 13x + 6$
- Solve each of the following equations. Make sure to check your solution.
 - $2(x - 7) - 3(5 - 3x) = 2(x - 1)$
 - $\frac{2x - 1}{3} - \frac{1 - 5x}{2} = 3x - 2$
 - $20x + 5x^2 = 385$
 - $12x = 2x^2 + 4$
 - $3x^2 + 12x = 0$
- Simplify each of the following expressions.
 - $\sqrt{50} - 3\sqrt{18} + \sqrt{200}$
 - $(8 - \sqrt{5})^2$
 - Rationalize $\frac{3}{\sqrt{10} - 4}$
 - Find the exact value of $x^2 - 4x + 7$ if $x = 5 - \sqrt{2}$
- Graph the straight lines $y = -\frac{2}{3}x + 1$ and $x + 2y = 0$ in the same coordinate system. Use your graph to find the coordinates of the point where the lines intersect.
- Graph the parabola $y = 8x + x^2 + 12$. Clearly label the coordinates of five points on the parabola, including vertex and intercepts.
- One number is three less than twice another. Find these numbers if
 - their sum is 48
 - their product is 135.
- The hypotenuse of a right triangle is 58 cm. The difference between the other two sides is 2 cm. Find the sides of the triangle.
- Find the distance between $(7, -2)$ and $(3, 3)$.
- Compute the exact value of the area of the triangle with sides 10 cm, 10 cm, and 8 cm long.
- Consider the picture below.
 - Line segments AC and DE are parallel. Find the exact value of x .
 - Find the exact values of y , z , and h .



Answers

1.) For examples and more practice, see handout Factoring 1.

a) $4a(a^4 + 1)$ b) $4a(a^2 + 1)(a + 1)(a - 1)$ c) $a^4(a + 1)$

2.) For examples and more practice, see handouts Completing the Square parts 1, 2, 3, and 4.

a) $(2x - 5)(x + 3)$ b) does not factor c) $-2(x - 3 + \sqrt{7})(x - 3 - \sqrt{7})$

d) $4(x + 2)(x - 8)$ e) $6\left(x - \frac{3}{2}\right)\left(x - \frac{2}{3}\right) = (2x - 3)(3x - 2)$

3.) For examples and more practice, see handouts Linear Equations, Factoring 1, and Completing the Square parts 1, 2, 3, and 4.

a) 3 b) -7 c) -11, 7 d) $3 - \sqrt{7}, \sqrt{7} + 3$ e) 0, -4

4.) For examples and more practice, see handout Radical Expressions.

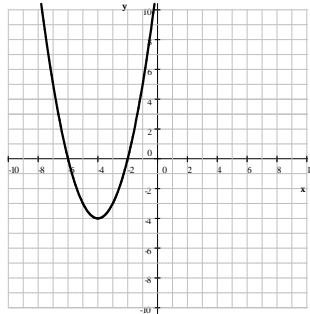
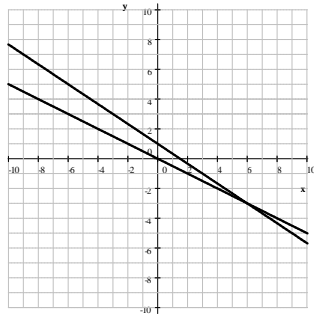
a) $6\sqrt{2}$ b) $69 - 16\sqrt{5}$ c) $-\frac{\sqrt{10} + 4}{2}$ d) $14 - 6\sqrt{2}$

5.) (6, -3)

6.) For examples and more practice, see handout Graphing Parabolas.

Vertex: $(-4, -4)$, y -intercept: $(0, 12)$, x -intercepts: $(-2, 0)$ and $(-6, 0)$

Additional points: $(-1, 5)$, $(-3, -3)$, $(1, 21)$, $(-5, -3)$



7.) For examples and more practice, see handouts Word problems 1 and 2.

a) 17 and 31 b) $-\frac{15}{2}, -18$ and 9, 15

For examples and more practice, see handout the Pythagorean Theorem

8.) 40 cm and 42 cm 9.) $\sqrt{41}$ units 10.) $A = 8\sqrt{21}$ cm²

11.) For examples and more practice, see handout Similar Triangles.

a) 4 b) $y = \sqrt{306} = 3\sqrt{34}$, $z = \sqrt{850} = 5\sqrt{34}$, $h = 15$